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Beattock and Moffat Sustainable Transport Options STAG Appraisal

STAG Report

On behalf of **SWestrans**

Project Ref: 41971 | Rev: 1 | Date: August 2019

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This report has been prepared by Peter Brett Associates LLP ('PBA') on behalf of its client to whom this report is addressed ('Client') in connection with the project described in this report and takes into account the Client's particular instructions and requirements. This report was prepared in accordance with the professional services appointment under which PBA was appointed by its Client. This report is not intended for and should not be relied on by any third party (i.e. parties other than the Client). PBA accepts no duty or responsibility (including in negligence) to any party other than the Client and disclaims all liability of any nature whatsoever to any such party in respect of this report.

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1 Introduction

1.1 Overview

- 1.1.1 SWestrans (the South-West of Scotland Transport Partnership) and the Beattock Station Action Group (BSAG) commissioned Peter Brett Associates LLP (PBA) in January 2016 to undertake a Scottish Transport Appraisal Guidance (STAG) Pre-Appraisal of sustainable transport options for Beattock and Moffat and the surrounding area in Dumfries and Galloway.
- 1.1.2 The work was presented to the SWestrans Board in July 2016. PBA was subsequently commissioned to undertake the STAG Part 1 Appraisal for the study in December 2016 and the STAG Part 2 Appraisal for the study in October 2017 by SWestrans.
- 1.1.3 A map showing the approximate study area is provided in Figure 1.1. The area encompasses Beattock and Moffat, with the total population of the study area just over 4,500¹.

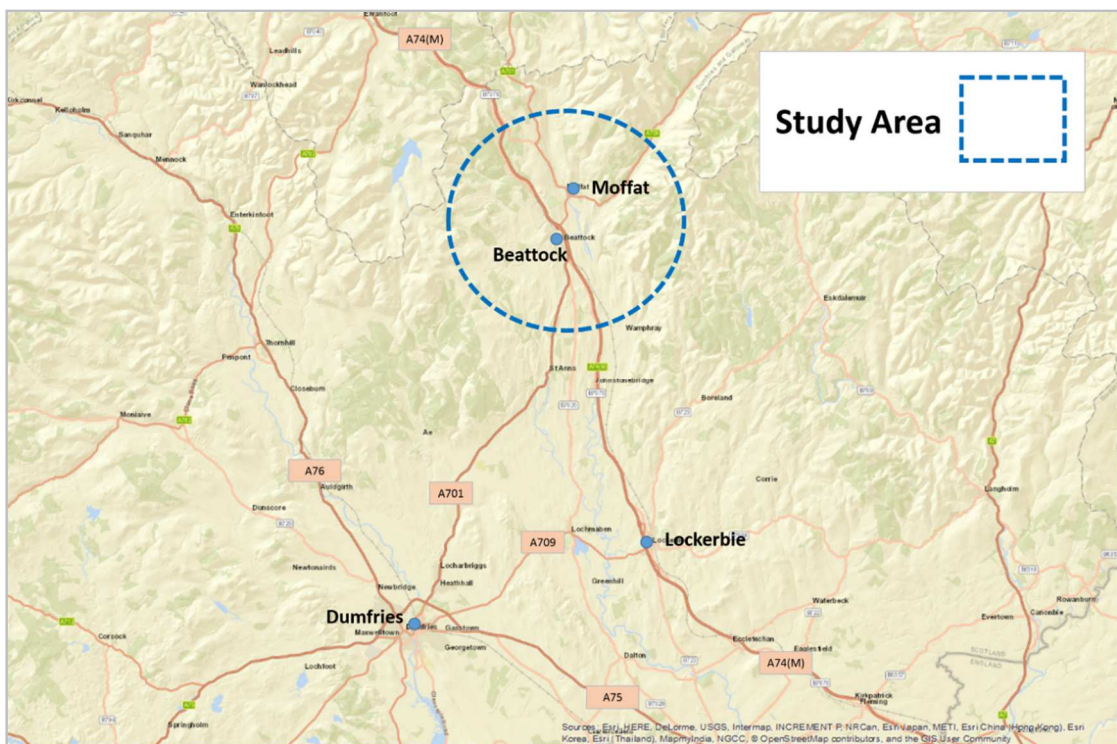


Figure 1.1: Beattock, and Moffat Study Area

- 1.1.4 Moffat is a key settlement for travel, tourism and business in central southern Scotland. The settlements of Moffat and Beattock are located just off junction 15 on the A74 (M) Corridor, around an hour's drive south from Glasgow and the central belt, and Beattock lies on the West Coast Main line, although the railway station at Beattock is no longer operational.
- 1.1.5 The recent focus of demand for improvements in the transport network for Beattock, Moffat and the local area has been for the reopening of Beattock railway station. Beattock, which sits on the West Coast Main Line (WCML), is around three miles from Moffat and had a station which was closed to passenger traffic in 1972, during electrification of the West Coast Main Line.

¹ Population figure is based upon 2011 Census Output Area Level data broadly corresponding to the study area as defined in Figure 1.1.

Currently there is a stretch of the West Coast Main Line, 75km in length, without a station from Lockerbie 20km to the south to Carstairs 55km miles to the north.

- 1.1.6 The potential re-opening of stations in Dumfries and Galloway is identified in the Dumfries and Galloway Regional Transport Strategy Delivery Plan (updated 2010). Four railway stations are considered worthy of consideration including those at Beattock, Eastriggs, Dunragit/Glenluce and Thornhill. The re-opening of Beattock Station is also noted in the Local Transport Strategy (where it is defined as a strategic aspiration).
- 1.1.7 However, while the potential for a station is noted in regional and local transport strategies, there has not previously been either a robust audit of the transport problems and opportunities in the local area, or the provision of an evidence-based case setting out why a new railway station may be the most appropriate means of tackling the transport problems and opportunities.
- 1.1.8 In recognition of the above issues, this STAG appraisal seeks to identify and evidence the transport problems and opportunities within Moffat and Beattock and the surrounding area and the most appropriate opportunities for addressing them. Whilst STAG is multi-modal in nature, the policy context driving this study means that it considers potential improvements in relation to all **sustainable modes of travel** only.
- 1.1.9 It should be noted that this study began in early 2016, with the final STAG 2 Report published in Summer 2019. Over the lifespan of the project, bus and rail timetables and services have altered. While base data has been revisited and updated, the analysis undertaken during the earlier stages of the project is reflective of the public transport network and services at the time it was undertaken.

1.2 Scottish Transport Appraisal Guidance

- 1.2.1 The study is being undertaken in line with the Scottish Transport Appraisal Guidance (STAG) and covers all stages of STAG. STAG is an objective-led framework and is based on an understanding of the transport problems, issues, opportunities and constraints; public consultation; and evidence-based objective setting. This ensures that the ultimate option or options progressed address the transport needs of the communities in question.
- 1.2.2 This STAG appraisal is multi-modal and seeks to identify and evidence the transport problems and opportunities within the study area, and the most appropriate opportunities for addressing them through the consideration of **all sustainable transport modes**.

2 Analysis of Problems and Opportunities

2.1 Overview

2.1.1 The purpose of the initial stage of a STAG study is to identify the problems, issues, opportunities and constraints within the **current and future** transport system.

2.1.2 These terms are defined within STAG as follows:

- **Problems:** Existing and future problems within the transport system, e.g. unreliable journey times
- **Opportunities:** Chances to improve the current situation by making changes to the transport system, e.g. improve journey times
- **Issues:** Uncertainties that the study may not be in a position to resolve, but must work in the context of, e.g. impact of the Local Development Plan (LDP)
- **Constraints:** The bounds within which the study is being undertaken, e.g. available funding

2.2 Methodology for Identifying Problems and Opportunities

2.2.1 Three key workstreams were undertaken as part of the study to support the identification and evidencing of problems and opportunities for the study: consultation; transport data analysis; and socio-economic data analysis.

2.2.2 **Consultation** was undertaken at various stages during the project lifetime, and has provided the backbone to understanding the problems and opportunities, and ultimately the 'Case for Change' for investment in the transport network in the Beattock and Moffat area.

2.2.3 The key evidence to support the Case for Change is presented in this chapter of the report, with a full summary of the consultation activities undertaken provided in:

- Appendix A – for consultation undertaken during the initial stages of the study; and
- Appendix L – for consultation undertaken during later stages of the study.

2.2.4 Information established through the **consultation and engagement activities** has identified a range of problems, and data and information relating to the **local transport network, travel-to-work patterns, existing public transport connectivity** has been used to provide the evidence of the problems.

2.2.5 **Socio-economic data**, has been used to provide context for the study as well as providing an understanding of the impacts of the transport problems from a social and economic perspective.

2.2.6 The process is highlighted in Figure 2.1.

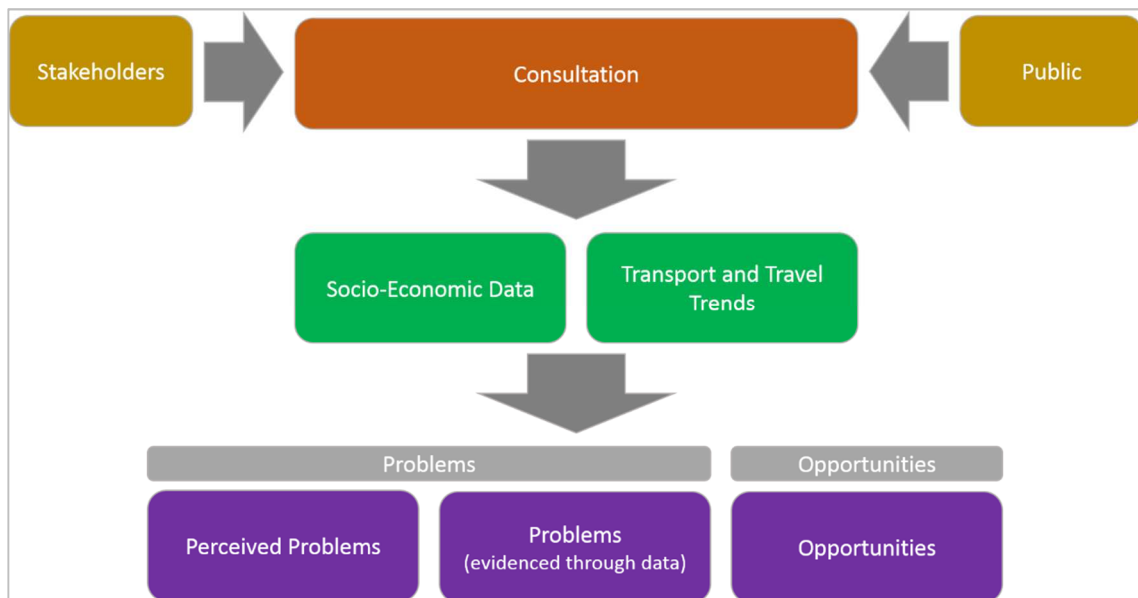


Figure 2.1: Identification of Problems and Opportunities - Process

2.2.7 The key data used in evidencing the problems and the impacts of the problems is presented in this chapter. Full details of all the data analysed is presented in:

- Appendix B and Appendix C in relation to the existing local transport network, travel-to-work patterns and existing public transport connectivity and accessibility mapping.
- Appendix D in relation to Socio-Economic data.

2.3 Engagement

2.3.1 An engagement exercise was undertaken at the outset of the study, in order to identify an initial set of problems and opportunities, and the economic and social impacts of these problems (Appendix A contains full summaries of the discussions). This included:

- An online public survey;
- Face-to-Face consultation with SWestrans and Dumfries and Galloway Council;
- Face-to-face consultation with Stagecoach (West Scotland), the largest commercial bus operator in the area;
- Discussion with SWestrans regarding smaller bus operators in the area;
- Telephone consultation with Annandale Community Transport Services (ACTS) – a local Community Transport provider;
- Face-to-face consultation with Transport Scotland; and
- Face-to-face consultation with the rail operators including:
 - Network Rail;
 - ScotRail; and
 - TransPennine.

- 2.3.2 It should also be noted that BSAG previously carried out a public survey over a six-month period in 2012–13 to find out people’s views on the proposal to reopen Beattock Station, with respondents asked whether they supported the reopening of the station and how this could benefit them and the wider community. Details of the key findings of the survey are also provided in Appendix A but it should be noted that the survey was rail, and not multi-modal, focussed.
- 2.3.3 Further engagement at the Part 1 and Part 2 stages of the study provided more detailed insight into the transport problems and impacts (Appendix L contains full summaries of the discussions). This included:
- A public event with an associated online survey. While the event also presented the Part 1 and Part 2 appraisal findings, it also provided extensive further insight into transport problems and their impacts;
 - Face-to-Face consultation with SWestrans and Dumfries and Galloway Council;
 - Face-to-face consultation with Stagecoach (West Scotland) and local bus operator Houstons;
 - Face-to-face discussion with Beattock Station Action Group;
 - Discussion with Moffat Academy pupils;
 - Email correspondence with the rail industry:
 - Network Rail;
 - ScotRail;
 - Virgin Trains West Coast; and
 - TransPennine.
 - Email correspondence with:
 - South Lanarkshire Council; and
 - Carlisle and Cumbria Councils.

2.4 Key Problems and Opportunities Identified

- 2.4.1 From the engagement exercise, the key problems and opportunities for the study area, as perceived by the public and the key stakeholders were reviewed and assessed before being collated into a succinct list of problems and opportunities, for which data has then been analysed.
- 2.4.2 The key transport problems and opportunities identified were as follows:
- PR1: Poor strategic public transport frequency
 - PR2: Long strategic public transport journey times
 - PR3: Lack of sufficiently direct public transport services
- 2.4.3 Each of these is presented below, alongside the key evidence of the problems.

PR1: Poor Strategic Public Transport Frequency

PR2: Long Strategic Public Transport Journey Times

PR3: Lack of sufficiently direct Public Transport Services

- 2.4.4 Public transport connections directly serving Beattock and Moffat are limited to the bus as there is no railway station in or near the towns.
- 2.4.5 It was noted in the initial public consultation exercise (see Appendix A) that Glasgow, Dumfries, Edinburgh and Carlisle (in that order) were the key locations people travelled to on a regular basis and there are very limited or no direct bus connections to Edinburgh and Carlisle. Where connections do exist the journey time is long, and the frequency of the connections is very limited.
- 2.4.6 The initial public consultation exercise highlighted:
- Of the three most common transport problems cited:
 - 'Long travel times to get to destinations' was the second most common problem (noted by 69% of respondents)
 - 'Lack of direct public transport routes' was the third most common problem (noted by 65% of respondents)
 - Local residents were not using the bus due to:
 - Long Journey Times (noted by 52% of non-bus users);
 - No direct routes to destination (noted by 48% of non-bus users);
 - Prefer the car (42% of non-bus users); and
 - Low bus frequencies (noted by 41% of non-bus users).
- 2.4.7 In addition, of those using the bus:
- 'Long journey times' was cited as the most significant issue faced when travelling by bus, noted by 52% of respondents (see Figure A.9);
 - 'Poor service frequency' was cited as another significant issue faced when travelling by bus, noted by 51% of respondents; and
 - 'Lack of direct routes' was the next most significant issue, noted by 49% of respondents.
- 2.4.8 Analysis of the results of the Public Event online survey (see Appendix L) also highlighted the following as problems:
- Long journey times by bus to Edinburgh and Glasgow, with 57% of respondents noting they felt this was a major problem to them (see Figure L.4);
 - A lack of direct public transport, with 58% of respondents noting they felt this was a major problem to them; and
 - Poor strategic bus frequency, with 43% of respondents noting they felt this was a major problem to them.

2.4.9 It was also noted by a number of bus operators during consultation that congestion in Dumfries town centre was a cause of additional journey time on bus routes into the town, and that reducing this delay would have significant impacts in reducing bus journey times on services starting or ending in Dumfries.

Key Evidence

2.4.10 In terms of existing public transport connections:

- Bus service 101 connects Beattock and Moffat with **Edinburgh** directly (with details provided in B.1.1). However, recent cuts to this service means there are only three bus services a day (with only one connection on a Sunday). The journey time is around 2 hours 15 minutes to 2 hours 30 minutes (the comparison by car is around 1 hour 30 minutes). A full day in Edinburgh travelling by public transport requires departing on the early 06:00 bus (the next bus at 13:00 leaves passengers with just 1 hour 30 minutes in Edinburgh before last return connection).
- The X74 service provides hourly connections between Beattock / Moffat and **Glasgow** on a weekday with a 2-hourly frequency on a Sunday. The overall journey time is 1 hour 35 minutes (the comparison by car is approximately 55 minutes off-peak).
- Service 74 (and the X74) provide a connection between Beattock / Moffat and **Dumfries**. On weekdays and Saturdays, the service is half hourly during peak times and hourly during the off-peak, with a 2-hourly service frequency on a Sunday. The journey time is around 40 minutes (the comparison by car is approximately 35 minutes). However:
 - Travel back from Dumfries is not possible after 20:45 (Mon – Sat); and
 - There is no access to Dumfries before 11:30 on a Sunday.
- There are currently no direct connections to **Carlisle**, with interchange required in Lockerbie or Dumfries. The journey time is around 1 hour 15 minutes – 2 hours depending on time of travel (the comparison by car is approximately 45 minutes – 1 hour off-peak).

2.4.11 A comparison has been made between Moffat / Beattock and the nearby town of Lockerbie considering:

- The number of direct public transport connections on a typical weekday to key strategic locations;
- The quickest possible morning (08:00 – 12:00) journey times from the towns to each of the key strategic locations; and
- The quickest possible evening (16:00 – 20:00) journey times from the key strategic locations back to the towns

2.4.12 Additional analysis is available considering further comparator towns in Appendix B.3. The analysis is presented in Table 2.1 and Table 2.2.

Table 2.1: Strategic public transport connections from Beattock and Lockerbie

	Strategic Location	Number of direct public transport connections	
		Moffat / Beattock	Lockerbie
To...	Glasgow	13	10
	Edinburgh	3	6
	Dumfries	18	22
	Carlisle	0	42

Table 2.2: Strategic public transport journey times from Beattock and Lockerbie (from TRACC Accessibility software)

Time Period	From / To	Strategic Location	Fastest public transport journey time (minutes)		
			Moffat / Beattock	Lockerbie	Difference (Beattock time minus Lockerbie time)
AM (08:00 – 12:00)	Outbound to...	Glasgow	113	77	36
		Edinburgh	128	82	46
		Dumfries	29	45	-16
		Carlisle	108	32	76
PM (16:00 – 20:00)	Back from...	Glasgow	113	66	47
		Edinburgh	121	75	46
		Dumfries	29	45	-16
		Carlisle	99	30	69

2.4.13 The tables show:

- There is a much greater offering of direct strategic connections from Lockerbie compared to Moffat / Beattock;
- The journey time from Lockerbie to Glasgow is significantly quicker (around 35 minutes quicker in the morning period and nearly 50 minutes quicker in the evening period) despite Moffat / Beattock being geographically closer;

- The journey time from Lockerbie to Edinburgh is significantly quicker (45 minutes quicker in the morning and evening periods) despite Moffat / Beattock being geographically closer; and
- The journey time from Lockerbie to Carlisle is significantly quicker (nearly 80 minutes quicker in the morning and 70 minutes quicker in the evening), than the journey time from Moffat / Beattock.

Key Economic and Social Impacts

2.4.14 From both the initial public engagement, and the Public Event and associated feedback from the online survey, the existing level of transport connectivity was felt to be causing a number of economic and social problems in the local communities, particularly in terms of:

- **Limiting visitors to the area.** The lack of direct public transport links was felt to be a constraint on tourism in the area. Visit Moffat noted during engagement that their project had been running for around 15 years as there is a tourist demand to visit the area and the Scottish Improvement District in Moffat is currently discussing ways to improve access to the area. It was noted that there is more accommodation in the area, per head, than in Edinburgh so there is capacity for more people to visit. It was felt that the lack of transport connectivity was constraining the number of visitors to the area, especially international visitors who had to hire a car to reach Moffat easily. It was noted that the town relies on tourists and it was felt that better transport links would be a huge benefit to local businesses, potentially increasing the availability of local employment opportunities.
- **Reduced accessibility to higher education opportunities.** It was noted that for families on lower incomes, affording accommodation for children to go to university can place a significant financial burden on the family, or mean that educational opportunities cannot be taken up. It was noted that 65% of pupils from Moffat Academy go on to higher education. Many university courses now run as full time courses compressed into three full days. If access by public transport to higher education and university locations (in particular to the universities and colleges in Glasgow and Edinburgh) was improved, it may be possible for students to remain at home during their studies, or take up opportunities which would otherwise not be possible. It was noted during engagement with the public that Dumfries and Galloway has a high university dropout rate compared to other areas in Scotland.

During consultation the head teacher of Moffat Academy noted the reducing roll at the school and therefore the difficulties in providing the full range of curriculum subjects. For certain subjects, teachers were transporting pupils to schools in Lockerbie to enable them to undertake study. This was a drain on both staff and pupil time. It was noted that improved connectivity had the potential to enable a greater number of pupils to attend the Academy as well as enabling the Academy to recruit teachers from a wider area. It was felt this could help stem the reducing roll at the school and provide greater opportunities for the pupils.

- **Reduced access to employment.** Long journey times by public transport was noted by the public to reduce their ability to access higher paid jobs in the Central Belt. If these opportunities were taken up at present, it meant a very early start / late return home was required with the subsequent impact of reduced family time. It was also noted by local business owners that improved transport links would allow them to provide their staff with better training, improving the skills of those living and working locally. While improved connectivity from the area would offer increased access to jobs further afield, improved connections could also attract businesses to the local area.
- **Community isolation.** Many people feeling remote and unable to access employment, education and social activities further afield, particularly in Edinburgh and Glasgow. This was felt to be a key driver in the area's inability to retain / attract younger people and the

associated ageing population profile, as younger people need to move elsewhere to easily access higher education opportunities and employment.

- **Limited opportunities to participate in social activities further afield.** Surveys undertaken at Lockerbie station (see Appendix N) showed that of those boarding at the station, 35% of people indicated that they would not have made the journey in the absence of a train service. Therefore, the lack of direct strategic connectivity from Beattock and Moffat is likely to be impacting on local people's ability to take up social and other opportunities further afield.

It was clear from discussions with pupils attending Moffat Academy (see Appendix L) that, Glasgow and Edinburgh are desirable destinations. At present however, given the very limited connectivity, access to Edinburgh is difficult, and the journey time to Glasgow was felt to be long. It was also noted that pupils would like to be able to access Carlisle more easily and tend not to at present due to the expense and hassle of requiring to catch a bus then a train.

It was noted that improved access to cities in both Scotland and England would provide the community with better access to music events, theatres, sporting events and social opportunities. For example, the pupils noted that there are talented sports men / women and musicians at Moffat Academy who are required to travel all over the country to access the best facilities and coaching.

- **Difficulties accessing healthcare.** The ability to access is a key concern, both in terms of accessing major healthcare facilities in Glasgow and Edinburgh. The demographics data analysis (as presented in Appendix D) shows a greater proportion of retirees in the Beattock and Moffat study area (24%), when compared to the Scottish average (17%). The lack of direct access, meaning interchange is required, can be particularly difficult for the elderly and those less able.
- **Those without a car and reliant on public transport are at a disadvantage.** The data highlights the significantly quicker journey times that are possible from Beattock and Moffat by car compared to public transport. The longer journey times by public transport constrain the employment and education opportunities accessible from the town. This is particularly the case in relation to Carlisle, where the public transport journey time from Beattock is around 1 hour 40 minutes and is unlikely to be considered an acceptable commute (whereas by car the journey time is less than an hour).

PR4: Limited Bus Operating Hours

2.4.15 Bus services:

- Do not operate across the entire day, often with the last service running in the early evening; and
- Operate with a much more limited Sunday service.

2.4.16 Analysis of the results of the Public Event online survey (see Appendix L) also highlighted that limited bus operating hours were an issue, with 55% of respondents noting it as a major problem to them.

2.4.17 It was noted in the Initial Public engagement exercise, by just under 40% of respondents, that 'services which run earlier in the morning or later in the evening' would improve the bus network.

Key Evidence

2.4.18 As noted in the discussion for PR1, PR2 and PR3, buses currently connect Beattock and Moffat to Edinburgh, Glasgow and Dumfries. In addition, there are regular connections to Lockerbie but:

- Travel back from Lockerbie is not possible after 17:35; and
- There is a much more limited service on a Sunday (with no bus from Moffat to Lockerbie until 11:30).

2.4.19 Table 2.3 shows all bus services which serve Moffat / Beattock setting out:

- The first bus departure to Edinburgh, Glasgow, Dumfries and Lockerbie;
- The last bus departure back from Edinburgh, Glasgow, Dumfries and Lockerbie; and
- The number of connections of the services a day.

Table 2.3: Bus Operating Hours from and to Beattock / Moffat

Beattock / Moffat ... To / From	Service	Serving	Weekday / Saturday			Sunday		
			First connection to (from Beattock)	Last connection back (arrival time in Beattock)	No. services (each direction)	First connection to (from Beattock)	Last connection back (arrival time in Beattock)	No. services (each direction)
Edinburgh	101	Dumfries – Beattock - Moffat – Edinburgh	06:01	23:00	3	10:30	23:06	1
Glasgow	X74	Dumfries – Beattock – Moffat – Glasgow	06:45	00:50	13	07:20	00:50	8
Dumfries	X74 / 74 /101	Dumfries – Beattock – Moffat – (Glasgow / Edinburgh)	07:45	21:20	20	10:50	21:20	10
Lockerbie	380	Lockerbie - Beattock – Moffat	07:20	18:05	10	11:25	18:10	4

2.4.20 Table 2.3 shows:

- The time of the latest bus back from Dumfries to Beattock at 20:45, arriving into Beattock at 21:30 on a weekday and at weekends;
- The time of the latest bus back from Lockerbie to Beattock at 17:35, arriving into Beattock at 18:05 on a weekday and at 18:10 on a Sunday;
- The limited bus services and much reduced operating hours on a Sunday, with the earliest bus from the area:
 - At 10:30 to Edinburgh;
 - At 10:50 to Dumfries; and
 - At 11:25 to Lockerbie.

Key Economic and Social Impacts

2.4.21 From both the initial public engagement, and the Public Event and associated feedback from the online survey, the existing bus operating hours was felt to be causing a number of social and economic problems in the local communities, particularly in terms of:

Reduced social opportunities. The ability to access local social events in Dumfries and Lockerbie is restricted, especially for activities which finish later in the evening. The last bus back from Dumfries to the area is at 20:45 and from Lockerbie at 17:35. This either requires people to use their cars, or leaves people without access to a car unable to participate. This issue also pertains to school children for whom participation in later finishing extra-curriculum school activities in Dumfries and Lockerbie is impossible without support.

It should be noted that there is likely to be a burden on partners / friends / parents in enabling others to access locations further afield who require lifts to then connect to public transport. For instance, given the very limited public transport connectivity (and the long associated journey time by bus) to Edinburgh and Carlisle, the lack of public transport connecting back to the area from later trains into Lockerbie means either a lift back to the area or an expensive taxi ride is required. A taxi comes at a considerable cost and may not be affordable to all, thus limiting social opportunities from the area for those without a car.

- **Reduced employment opportunities.** The lack of late evening bus connectivity and the much reduced Sunday services means it is difficult for those without a car or unable to drive to take up employment opportunities which require shift work or weekend working.

PR5: Poor Integration between Bus and Rail

2.4.22 In terms of integration between bus and rail, there are problems relating to:

- Poor integration between bus and rail timetables; and
- A lack of physical integration between bus stops and railway stations with the rail network not easily accessible, especially for those with limited mobility.

2.4.23 Analysis of the results of the Public Event online survey (see Appendix L) also highlighted poor integration between bus and rail as a problem, with 69% of respondents noting they felt this was a major problem to them.

Key Evidence

2.4.24 The closest stations to Moffat and Beattock are located at:

- Lockerbie (20km south) and Carstairs (55km north) on the West Coast Main Line; and
- Dumfries (30km south-west) on the Glasgow South West Line.

2.4.25 Figure 2.2 shows these stations and the daily services departing from these stations.

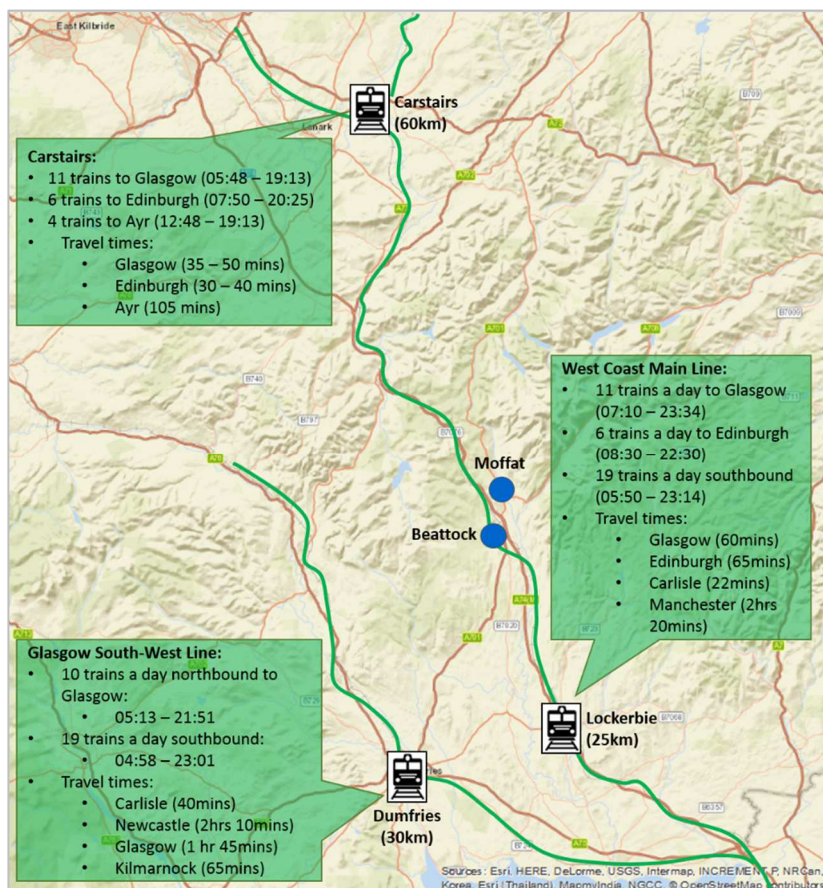


Figure 2.2: Closest railway stations

Rail network not easily accessible

2.4.26 If accessing Lockerbie station, the closest bus stop is on Bridge Street, around a 3-minute walk to the station. For access to the station by car, the current high use of the car park means people are often required to park on nearby streets and then walk to the station, presenting difficulties for those less able. Although, it is noted that disabled parking is available in the station car park.

2.4.27 If accessing the station in Dumfries from Moffat and Beattock, the closest bus stop to the station is on Edinburgh Road with a 10-15-minute walk required to the station from the bus stop. For those with limited mobility, this can present a difficult interchange between bus and rail.

2.4.28 Carstairs to the north is around 55km away from Moffat and Beattock, a considerable distance and only accessible by car, and only offers infrequent connections to Glasgow and Edinburgh. Larkhall is slightly further north (65km) providing a greater service offering for trains to Glasgow, but again, is only accessible by car. For rail access to the north, people often travel the 25km south to Lockerbie to join the rail network there.

Poor integration between bus and rail timetables

- 2.4.29 Analysis of integration between bus and rail timetables has been undertaken (reflecting winter 2016/17 timetables) for both north and southbound services at Lockerbie, considering the available bus services connecting from Beattock / Moffat to departing and arriving train services. The analysis is shown in Appendix J.1.
- 2.4.30 The analysis considers 'access time' i.e. the total travel time from Beattock / Moffat to a departing train (i.e. an outbound trip), or from an arriving train back to Beattock /Moffat (an inbound trip) and considers bus travel time, any walk time required between bus stop and railway station and any wait time (either at the station for outbound trips) or at the appropriate bus stop (for inbound trips).
- 2.4.31 Appendix J.1 shows how **existing** bus services to and from Beattock / Moffat tie in with rail departure times from Lockerbie Railway Station. For each rail departure the figures indicate time spent on the bus, walk time between the bus stop and station, and additionally time spent waiting at the station. For arrivals by rail (when the trip being considered is from the railway station back to Beattock / Moffat), the figures include the walk time from the station to the required bus stop, wait time at the bus stop, and the journey time by bus back to Beattock / Moffat.
- 2.4.32 The analysis highlights that at present, in the **outbound** direction:
- Bus services often align poorly with rail departures from Lockerbie station, with waiting times in Lockerbie:
 - 6 minutes to 2 hours 10 minutes for rail departures southbound;
 - 40 minutes to 3 hours 30 minutes for rail departures to Edinburgh; and
 - 9 minutes to 3 hours 10 minutes for rail departures to Glasgow.
 - Bus services only operate from Beattock from circa 07:20 to 18:30, meaning that Beattock residents cannot access the first two rail departures southbound, or first northbound departure to Glasgow; and
 - As a result, interchange time makes up a significant proportion of total 'access' journey time to Lockerbie of 56%, 69% and 57% for trips southbound, Edinburgh and Glasgow respectively.
- 2.4.33 The analysis highlights that at present, in the **inbound** direction:
- Bus services are again focussed on the centre of the day, and there is no bus connection to Beattock for the last five rail arrivals from the south, last two from Edinburgh and last three from Glasgow.
 - As such wait times vary strongly across the day from:
 - Three minutes to one hour following rail arrivals from the south;
 - 15 minutes to one hour following rail arrivals from Edinburgh; and
 - 10 minutes to 1 hour 50 minutes following rail arrivals from Glasgow.
 - As a result, interchange makes up an average of 44%, 52% and 67% of total journey time from Lockerbie for trips from the south, Edinburgh and Glasgow respectively.

2.4.34 Overall, the analysis shows the existing lack of integration between bus and rail times for many of the rail departures and arrivals.

Key Economic and Social Impacts

2.4.35 From both the initial public engagement and the Public Event and associated feedback from the online survey, the existing level of public transport integration was felt to be causing a number of economic and social problems in the local communities, particularly in terms of:

- **Impact on those with mobility issues.** The lack of integration between bus and railway stations and services creates long wait times for services and a need to interchange between services. This is particularly difficult for the elderly and those less able.
- **Reduced social opportunities.** The lack of bus and rail integration, particularly with a lack of connecting bus services to later evening trains, limits the potential to utilise the combined public transport network for accessing social and recreational opportunities.

PR6: Lack of Safe Cycling Route between Moffat and Beattock

2.4.36 Consultation highlighted that:

- It was felt that cycle provision in the area was poor with cyclists forced to join busy carriageways or cycle beside them; and
- A number of respondents to the Online Public Event survey noting that active travel routes in the area needed to be improved.

2.4.37 Analysis of the results of the Public Event online survey (see Appendix L) also highlighted a lack of direct and safe cycling routes as a problem, with 36% of respondents noting they felt this was a major problem to them.

Key Evidence

2.4.38 There are a number of active travel links in the vicinity of Beattock and Moffat, including some long distance cycle routes. These are shown in Figure 2.3 and can be summarised as follows:

- National Cycle Route 74 – a long distance route between Carlisle and Uddingston. Within the study area the route passes along the A701 to the east of Beattock;
- Regional Cycle Route 10 – a long distance route linking Beattock to Dumfries. As shown in the image the route doesn't connect directly to Beattock but stops just north of the settlement;
- The southern Uplands Way – a long distance coast to coast route linking Portpatrick in the west, and Cockburnspath in the east. Within the study area the route follows the same path as Regional Cycle Route 10 before continuing east; and
- A shared use footway / cycleway adjacent to the A701 between the A701 / A74(M) and Moffat currently extends from Beattock half way to Moffat before cyclists are advised to re-join the carriageway, however:
 - The shared use footway is immediately adjacent to the carriageway;
 - There is no lighting along much of the route;
 - Parts of the A701 on this section have a 60mph speed limit;

- At the point where cyclists are advised to re-join the carriageway, the footway narrows, with the result that there likely to be insufficient space to provide a shared use facility.

2.4.39 The speed of traffic and the lack of lighting is highly likely to deter use of the route for cycling for safety reasons.

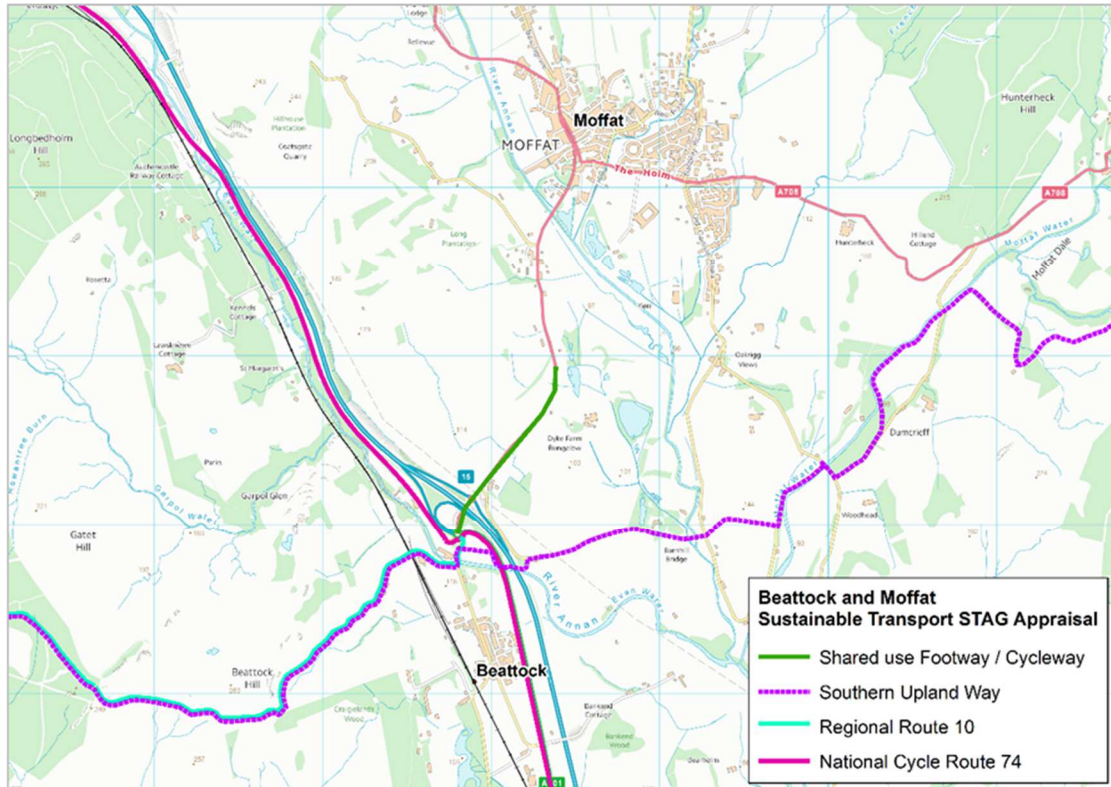


Figure 2.3: Cycle links around Beattock and Moffat

Key Economic and Social Impacts

- **Constraining the tourism market.** The lack of strategic cycle access between Beattock and Moffat, linking to the southern Upland Way and National Cycle Route 74 could be reducing the number of visitors to both communities, especially to the tourist offering provided in Moffat.
- **Limiting access to Moffat (the much larger community) from Beattock by active travel means** with the subsequent impact: on those without access to a car; to the environment; and to the health of the local community. The lack of a safe route is also potentially deterring younger and less competent cyclists from making the trip by bike.

2.5 Issues and Constraints

- 2.5.1 In the context of considering options, it is important to note the situation with respect to the bus industry across Dumfries and Galloway as a whole in what is a rural context.
- 2.5.2 In this respect, a key major issue facing transport in the area is the ongoing viability of the bus network. In total, over half of the bus network in Dumfries and Galloway operate with partial or full subsidy from SWestrans, and this subsidy is reducing in the light of funding pressures (see Table 2.4 below). There is therefore uncertainty regarding how much funding will be available in the future for supporting bus services.
- 2.5.3 Figure 2.4 shows the operating commercial and subsidised buses in the area.

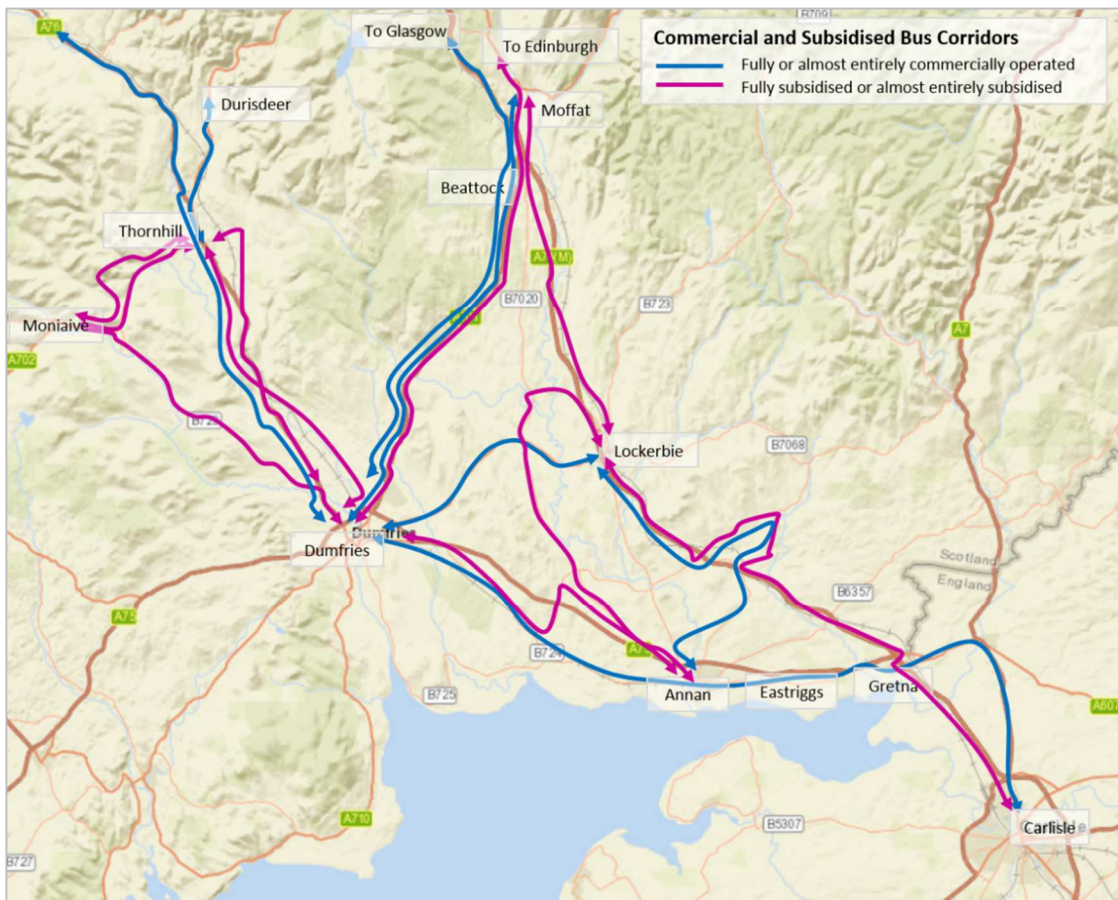


Figure 2.4: Commercial and subsidised bus services in the area (as at December 2017)

- 2.5.4 Table 2.4 shows SWestrans bus subsidy budget since 2015/16.

Table 2.4: Available SWestrans subsidy

Year	Available Subsidy (£)	Change in subsidy available compared to previous year
2015 / 16	£3,735,600	-
2016 / 17	£3,473,040	-7.0%
2017 / 18	£3,400,798	-2.1%
2018 / 19	£3,395,741	-0.1%
Overall subsidy reduction 2015 / 16 to 2018 / 19		-9.1%

- 2.5.5 The available resources (vehicles and drivers) which operate bus services across the region are heavily utilised throughout the day over a variety of routes. For commercially run services, the overall viability of services is, in many cases, only achievable due to the high use of services in the morning by school children / school contracts. As such, the overall bus network and operation across the region is fragile and even minor changes to routes or services (or indeed any new competition with rail), which have the potential to tie up resources or affect patronage, could have major consequences. This is an important point when considering any changes to the existing bus network. In addition, for those without access to a car, there is often no alternative other than the bus, and bus services are therefore 'lifeline' in nature.
- 2.5.6 In addition, clear cognisance must be taken in consideration of instating any new bus services operating with subsidy which could have an impact on commercially operated services. The relevant legislation is contained in Section 63 of the Transport Act 1985 (as amended) which states:
- (2)(a) "It shall be the duty of a council in Scotland ... to secure the provision of such public passenger transport services as the council consider it appropriate to secure to meet any public transport requirements within their area which would not in their view be met apart from any action taken by them for that purpose"*
- (5) "For the purpose of securing the provision of any service under subsection (2)(a) any council shall have power to enter into an agreement providing for service subsidies; but their power to do so shall be exercisable only where the service in question would not be provided without subsidy"*
- 2.5.7 It should be noted that while the above Act refers to the council, this responsibility was transferred from Dumfries and Galloway Council to SWestrans via a transfer of functions order in 2006. Under the Act therefore SWestrans has a duty to secure services it thinks are required where they are not provided by the market, but it cannot secure a service already provided by the market.
- 2.5.8 The key issue is the interpretation of "service": there are many examples of subsidised services that partially parallel commercial services. In developing options, a clear understanding of the purpose of any new subsidised services is required in order to show that the proposals are legal.

2.6 Opportunities

Economic

2.6.1 Economic benefits include:

- The ability to increase access to jobs in the Central Belt and Carlisle;
- The ability of improved connectivity to the area in helping sustain the community through the retention of young people, through offering improved access to education, employment, and social opportunities; and
- Increased opportunities for local businesses to take advantage of improved connectivity for their business to provide training for staff and increase local skills.

Tourism

2.6.2 Moffat is a tourist town but it is felt that current connectivity is constraining the tourist market, especially for international visitors without access to a car. Additionally, day trippers from Edinburgh and Glasgow are unlikely to travel to the area by public transport given the long journey times and limited connections (from Edinburgh) which does not allow for an effective day trip.

Social

2.6.3 In terms of social opportunities, the general feeling of the community (as noted in the public engagement elements of the study) is that improved transport connections have real potential in terms of the long term sustainability of the community, encouraging younger people to remain or move into the area to rebalance its current ageing population profile and offering improved social accessibility for all.

Environmental

2.6.4 Beattock has the potential to capitalise on sustainable tourist opportunities, as well as a reduction in the current high reliance on the private car for travel. Reduced emissions and noise levels could be key benefits of the implementation of greater sustainable travel access in the area.

3 Objective Setting

3.1.1 This section sets out the Transport Planning Objectives (TPOs) for the study. The TPOs express the outcomes sought for the study and describe how the identified key problems can be alleviated (without indicating any potential solution). The objectives will form the basis for appraisal of the options at STAG Part 1 Appraisal (and subsequently, with refinement, during the more detailed STAG Part 2 Appraisal).

3.1.2 The development of the TPOs has been informed by:

- Consideration of the key problems and opportunities identified;
- The wider established transport, land use planning and economic policy context as discussed below;
- Discussions during the stakeholder engagement programme; and
- Discussion with the client group.

3.1.3 The objectives have been developed with SMART principles in mind as specified below:

- **Specific:**
It will say in precise terms what is sought
- **Measurable:**
There will exist means to establish to stakeholders' satisfaction whether or not the objective has been achieved
- **Attainable:**
There is a general agreement that the objectives set can be reached
- **Relevant:**
The objective is a sensible indicator or proxy for the change which is sought
- **Timed:**
The objective will be associated with an agreed future point by which it will have been met.

3.2 Objective Setting Policy Hierarchy

3.2.1 The TPOs set for the study, while reflecting the identified problems, also support the range of established national, regional and local policy directives, plans and strategies.

3.2.2 Figure 3.1 shows the key transport, planning and economic policy, strategy and plan hierarchy under which the study is positioned, and to which the study objectives are aligned.

3.2.3 Details of the key aims and objectives for each of the noted policy directives, plans and strategies shown in Figure 3.1 are discussed in Appendix E .

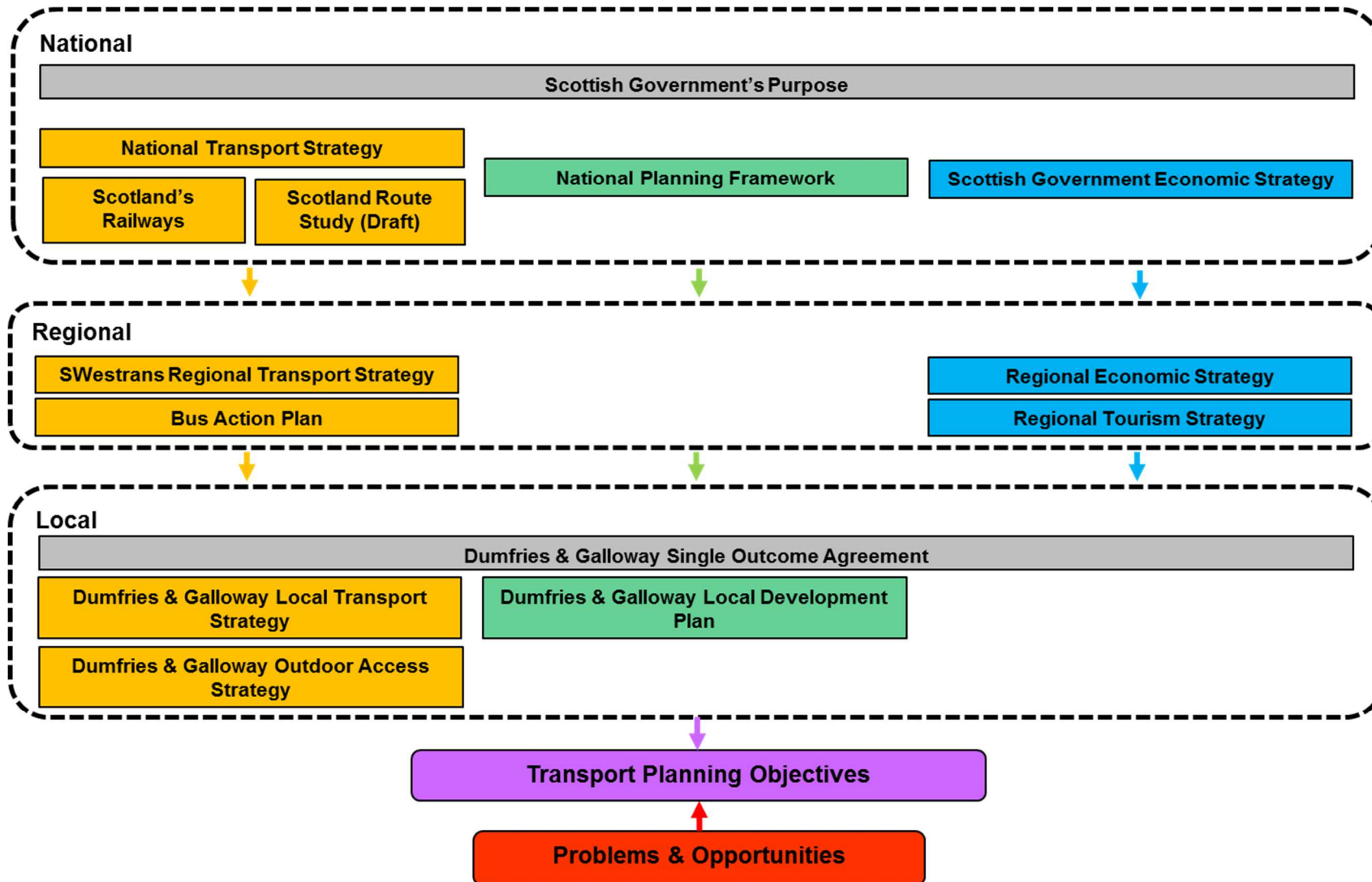


Figure 3.1: Objective Setting Policy Hierarchy

3.3 Transport Planning Objectives

3.3.1 The setting of TPOs is a key step in the STAG process, as they define what the policymaker is seeking to achieve through the transport intervention. The objectives that have been developed for this appraisal are designed to reflect and address the problems and opportunities identified, whilst also focussing on the delivery of the wider policy context.

3.3.2 The resulting TPOs for the study are set out below. In line with the problems and opportunities identified, they are focussed on addressing the provision of sustainable travel options that facilitate access to employment, retail and key services.

- **TPO 1:** Enable an effective day trip by public transport to key education, retail and social opportunities in Glasgow, Edinburgh and Carlisle
- **TPO 2:** Provide public transport connectivity which enables travel to and from the area across the day and across the week
- **TPO 3:** Increase the inbound public transport catchment to support local businesses through increased visitors to the area

3.3.3 Figure 3.2 shows how the problems set out in Chapter 2 have fed into the objectives. The dotted lines linking the problem PR6 to the objectives reflects that the problem partially links to the objectives. This reflects the part that active travel can play in enabling connections to the strategic transport network but recognises that it is unlikely that active travel modes would be used for an entire strategic trip, given the distances involved.

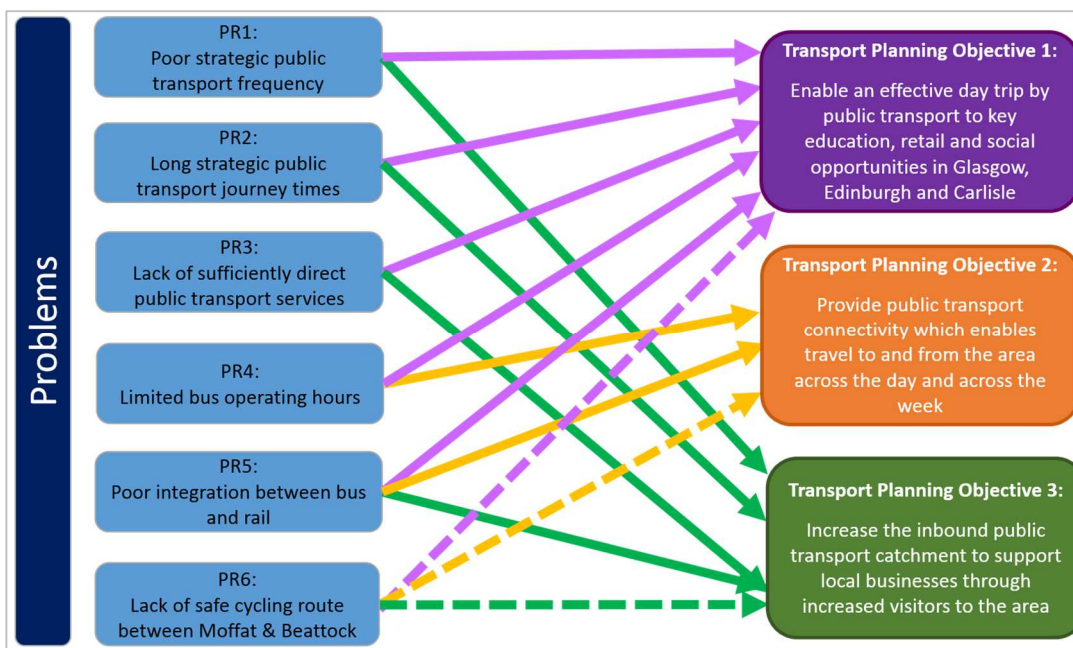


Figure 3.2: Problems mapped to Objectives

4 Option Generation, Development & Sifting

4.1 Overview

4.1.1 Drawing on the problems and opportunities identified and considering the developed objectives, an initial list of options which could potentially resolve them was developed. In line with STAG, the potential options were derived through:

- ideas / outputs from the consultation process;
- ideas / proposals that have previously been developed and remain viable options; and
- ideas / outputs from structured decision making processes, followed by our team undertaking the 'optioneering' exercise.

4.2 Option Generation

4.2.1 This section sets out the potential options which have been identified for addressing the transport problems and opportunities in Beattock and Moffat.

Do Minimum & Reference Case

4.2.2 STAG requires the establishment of a 'Do Minimum' and 'Reference Case':

- The 'Do Minimum' is the current position plus any committed investments which have policy and funding approval. The Do Minimum is the basis against which all other options should be measured.
- The 'Reference Case' includes other non-controversial but as yet uncommitted transport schemes and / or development profiles, which can also be used as a baseline for option comparison.

4.2.3 With no committed transport improvements in the Beattock and Moffat area, the 'Do Minimum' and 'Reference Case' for this study represent one and the same – i.e. the continuation of the current situation.

Options Generated

4.2.4 The generated options are shown in Table 4.1 alongside a high level appraisal against the Transport Planning Objectives.

Table 4.1: Generated Options

Option No.	Option Description	High-level Appraisal against Objectives		
		TPO1: Effective day trip	TPO2: Connectivity across the day and week	TPO3: Increase inbound transport catchment
1	Dedicated bus service operating between Moffat / Beattock and Lockerbie Railway Station, integrated with train times	✓	✓	✓
2	Bus priority measures in Dumfries Town Centre (focused on improving bus journey times and reliability in Dumfries town centre by providing bus priority measures)	✓		
3	Increased direct buses to Edinburgh	✓	✓	✓
4	Park & Ride (Bus) at Beattock (would include a strategic Park & Ride site at Beattock to serve those wishing to travel northwards to the central belt with services potentially linking with quicker public transport services to Edinburgh)	✓		✓
5	Increased promotion and further development and support for local community transport		✓	
6	Re-open Beattock Railway station	✓	✓	✓
7	Improved cycle link between Beattock and Moffat	✓	✓	✓

4.3 Option Development

4.3.1 A number of the options were further developed in order to clarify the details of each to allow for informed appraisal – this is set out in Table 4.2 below.

Table 4.2: Option Development

Option	Description	Further development
1	Dedicated bus service operating between Moffat / Beattock and Lockerbie Railway Station, integrated with train times	<p>The option is focussed on improving integration between bus and rail by providing bus services (potentially a dedicated bus) which integrates with train arrival and departure times at Lockerbie, providing transport integration benefits and increased accessibility.</p> <p>Service 380 operates between Moffat and Lockerbie and is relatively frequent in the morning and during the day Monday – Friday. An additional stop could be added at Lockerbie Railway Station to allow for more efficient interchange. Potentially only minor adjustments may be needed to the timetable to better integrate with rail departure/arrival times to/from Edinburgh/Glasgow and Carlisle.</p> <p>The option has been further developed and includes:</p> <ul style="list-style-type: none"> ▪ Option 1a: Provision of a dedicated bus service operating between Moffat and Beattock and Lockerbie railway station, integrated to reduce interchange times between bus and rail. ▪ Option 1b: Adjustment of Service 380 bus times to reduce interchange time at Lockerbie Railway Station and service operating hours extended later into the evening. <p>It is recognised that commercially there may not be sufficient demand to encourage the current operator to increase the frequency of their services and there is very limited availability of the existing SWestrans budget to fund further subsidised services. A material change would therefore likely be required to the level of bus subsidy currently available to deliver these options</p> <p>For both Options 1a and 1b, this could involve establishing a Statutory Quality Bus Contract (SQC) specifying the railway stations as stops, minimum service frequencies and maximum interchange time.</p>
2	Bus priority measures in Dumfries town centre	<p>The option would benefit all bus services / users within the town and reduce journey times into Dumfries. This option assumes journey time benefits to bus services through:</p> <ul style="list-style-type: none"> ▪ Selective vehicle detection (SVD) or selective vehicle priority (SVP) at traffic signals to provide priority / 'green waves' for buses; ▪ Increased implementation of signal optimisation platforms such as MOVA or SCOOT to better manage traffic flow, traffic fluctuations and congestion in the town centre.

Option	Description	Further development
		<p>Further consideration has been given to this option with full details to the option's development provided in Appendix F which shows how data from the existing SCOOT system has been analysed to consider whether there is justification for an extension of bus lane operating hours on Glasgow Street (A76).</p> <p>In terms of specific bus priority that may benefit buses coming into Dumfries from Thornhill (i.e. on the A76), there is potential for:</p> <ul style="list-style-type: none"> ▪ Extension of the operating hours of the existing southbound bus lane on Glasgow Street to full day operation, between 07:30 – 18:00 (from the current 07:00 – 09:30 and 16:00 – 18:30 operating hours); ▪ Extension of the southbound bus lane on Glasgow Street such that it extends to the Cuckoo Bridge retail park roundabout and potentially further north to the A76/A75 roundabout; ▪ Implementation of a northbound bus lane on Glasgow Street between the Cuckoo Bridge retail park roundabout and the A75/A76 roundabout; and ▪ Implementation of a bus lane on Buccleuch Street between Glasgow Street and Whitesands to provide joined up bus priority from Glasgow Road to the Whitesands bus station. <p>The outcome of the analysis suggests there is potential for the extension of operating hours of the bus lane from peak to full day operation. However, the costs of implementing the bus lane extensions both north and southbound are unlikely to be justified based on local knowledge of current traffic congestion and the cost of implementation.</p> <p>Option 2 therefore includes:</p> <ul style="list-style-type: none"> ▪ On-going investment in, and recalibration of the SCOOT system; ▪ Investment in a wireless detection system; and ▪ Extension of the operating hours of the southbound bus lane on Glasgow Street to full day operation.
3	Increased direct bus services to Edinburgh	<p>The frequency of the existing 101/102 service between Edinburgh and Beattock is low, especially during off-peak hours and evenings Monday – Friday, Saturday services are infrequent and there is only one service from Beattock to Edinburgh on a Sunday, and the one Sunday service from Edinburgh to Beattock runs late in the evening.</p>

Option	Description	Further development
		<p>The option assumes:</p> <ul style="list-style-type: none"> ▪ Increasing the frequency of Service 101/102 with a service every 2 hours during the day and evenings Monday – Sunday. <p>It is recognised that commercially there is not sufficient demand to encourage the current operator to increase the frequency of their services and there is very limited availability of the existing SWestrans budget to fund further subsidised services. A material change would therefore likely be required to the level of bus subsidy currently available to deliver these options.</p>
4	Park & Ride (Bus) at Beattock	<p>The option assumes:</p> <ul style="list-style-type: none"> ▪ A bus service operating from Beattock to connect to rail in the Central Belt (potentially at Motherwell or Larkhall) <p>As above, should the level of demand for such a service not be sufficient, it is noted that there is very limited availability of the existing SWestrans budget to fund further subsidised services.</p>
5	Increased promotion and further development and support for local community transport	<p>Community Transport can play a critical role in meeting the transport needs of a wide range of groups where conventional transport fails to do so.</p> <p>The existing community transport provider for the Beattock area, Annandale Community Transport Services (ACTS) offer a range of community transport services including group individual transport services for those who have difficulty using conventional bus routes.</p> <p>There is no specific funding through SWestrans etc. for Community Transport. However, the Community Planning Partnership has endorsed a strategic, coordinated and integrated approach to social/community transport service delivery across the partnership through the development of a Public Social Partnership (PSP). This approach involves the third sector earlier and more deeply in the redesign of Dumfries and Galloway's social and community transport services.</p> <p>The aim of the PSP in general terms is to improve the design of transport services delivered on behalf of the Commissioner(s) and to develop the capacity of the social and community transport sector. This is to be achieved by working in partnership to maximise the benefits to the community.</p> <p>The PSP is a multi-agency partnership between Dumfries and Galloway Council, the south West of Scotland Transport Partnership, NHS Dumfries and Galloway and the Community Transport operators/Third Sector Interface.</p>

Option	Description	Further development
		<p>The specific aims of this PSP are to develop a genuine and lasting partnership to support the remodelling of the Commissioner(s) services and to build the capacity of the sector to be able to delivery these services in the future by:</p> <ul style="list-style-type: none"> ▪ Understanding the market; ▪ Increasing capability and capacity; and ▪ Responding to changing demand. <p>Dumfries and Galloway PSP is currently seeking to engage with Third Sector organisations to work within the Public Social Partnership around three work streams:</p> <ul style="list-style-type: none"> ▪ Transport Service Developments; ▪ Health and Social Care Transport Solutions; and ▪ Capability and capacity building. <p>Initial scoping work has already begun with Third Sector and Public Sector partners through the co-produced “State of the Sector and Improvement Plan” report and the review of the non-emergency patient transport (NEPT) services. The work to redesign and pilot services will take place over a period of years.</p> <p>ACTS highlighted their desire to explore ways to improve access to healthcare, including:</p> <ul style="list-style-type: none"> ▪ The potential for a demand responsive, or similar, service in the evenings from Beattock and, more particularly, surrounding villages, to and from the main hospital in Dumfries, particularly to improve accessibility during the evening visiting hours. This was felt to be particularly important for more elderly residents for whom a trip bus involves interchange in central Dumfries which was considered to be potentially cold and frightening. ▪ Developing relationships and arrangements with local health centres where, on a particular afternoon, the health centre would ‘block out’ appointments for those coming by community transport from surrounding villages, such that access could be provided by a single coordinated community transport vehicle.

Option	Description	Further development
6	Re-open Beattock Railway Station	<p>Consideration was given to the potential train services that could serve a stop at Beattock. This included the potential for different types of services to provide a connection in the medium and longer term (as discussed in detail in the Part 1 Appraisal) and considers:</p> <ul style="list-style-type: none"> ▪ Existing services serving a new Beattock station in the medium term; ▪ New services serving a new Beattock station in the longer term. <p>Both options would require a complementary shuttle bus service offering connectivity from Moffat to the station at Beattock. It is assumed that the following will be provided at the station:</p> <ul style="list-style-type: none"> ▪ Proportionate car parking and bus access; ▪ DDA complaint footbridge or public road underbridge; ▪ Passenger facilities, including waiting shelters, Customer Information System (CIS), Public Address, CCTV system, and ticket machines; and ▪ Signalling as required.
7	Improved cycle route between Beattock and Moffat	<p>As discussed in PR6 in the Problems section, there are a number of active travel links in the vicinity of Beattock and Moffat, including some long distance cycle routes. These were presented in Figure 2.3 and can be summarised as follows:</p> <ul style="list-style-type: none"> ▪ National Cycle Route 74 – a long distance route between Carlisle and Uddingston. Within the study area the route passes along the A701 to the east of Beattock; ▪ Regional Cycle Route 10 – a long distance route linking Beattock to Dumfries. As shown in the image the route doesn't connect directly to Beattock but stops just north of the settlement; ▪ The southern Uplands Way – a long distance coast to coast route linking Portpatrick in the west, and Cockburnspath in the east. Within the study area the route follows the same path as Regional Cycle Route 10 before continuing east; and

Option	Description	Further development
		<ul style="list-style-type: none"> ▪ A shared use footway / cycleway adjacent to the A701 between the A701 / A74 and Moffat – as shown in the figure this route extends half way to Moffat before cyclists are advised to re-join the carriageway. <p>In order to improve walking and cycling connections between Beattock and Moffat, a number of options were considered. Details of these options and the rationale for not exploring them further is provided below.</p> <ul style="list-style-type: none"> ▪ Providing a link between National Cycle Route 10 and Beattock village – currently the existing shared use facility stops at the start of RCR10. In order to continue the connection a shared use facility could be provided on the existing footway to Beattock. However, the existing footway is narrow and there are a number of side entrances which would cross the routing, making the provision of a shared use facility difficult. ▪ Providing additional signage at the entrance to the southern Upland / Barnhill Road - the southern Upland Way crosses the study area in an east - west direction south of the A701 / A74 interchange. On the eastern side of the A74, the route links to Barnhill Road which continues north to the A701. This route could act as a link between Beattock and Moffat which avoids the A701 / A74 junction. However, the route would be circuitous in comparison to the existing route through the A701 / A74 junction (which utilises the pavement through the junction and so is not on-road) and was therefore not felt to be desirable. ▪ Continuing the existing shared use footway / cycleway on the A701 to Moffat – the existing shared use facility could be continued north to Moffat. However, at the point where cyclists are advised to re-join the carriageway, the footway narrows, with the result that there is insufficient space to provide a shared use facility.

4.4 Option Sifting

- 4.4.1 Best practice in STAG is that all options should be retained until evidence is provided that the option will not deliver against the TPOs and STAG criteria (and hence will not address the problems and opportunities). At this stage, it is recommended that options which will clearly not deliver the intended outcomes should be eliminated from further consideration.
- 4.4.2 Many of the options developed above have the potential to contribute towards delivering against the TPOs and STAG criteria and thus could be considered in more detail at the STAG 1 appraisal stage. The options considered unlikely to meet these criteria are:
- Option 2 – Bus priority measures in Dumfries town centre
 - Option 4 – Park & Ride at Beattock
 - Option 7 – Improved off-road cycling Infrastructure between Beattock and Moffat
- 4.4.3 Options 2, 4 and 7 are being rejected at this stage.
- 4.4.4 Option 2 is rejected as:
- The option is not solely focused on benefitting only sustainable transport as it would likely benefit all those on the road network within Dumfries, providing improved journey times for cars also, given the optimised SCOOT traffic light system operation. This would not encourage greater use of the sustainable transport network; and
 - Although, it is recognised that providing bus priority measures may lead to bus services being more punctual in general and therefore lead to improved connections overall, the option does not explicitly involve new connections from / to the study area and is therefore unlikely to strongly support the Transport Planning Objectives.
- 4.4.5 Option 4 is rejected because:
- The X74 (Dumfries to Glasgow) service runs between Dumfries and Glasgow stopping at Beattock and Moffat every hour during the day on Monday – Saturday and every two hours during the day on a Sunday. Providing a new service from an easily accessible Park & Ride site to provide accessibility to the Motherwell / Central Belt area (and hence onwards via rail to Edinburgh/Glasgow) is unlikely to be able to compete with direct journey times by bus from Beattock/Moffat to Edinburgh, or by bus to Lockerbie to then access the faster trains to Edinburgh/Glasgow on the West Coast Mainline. As such the option was not progressed.
- 4.4.6 Option 7 is rejected given:
- Constraints along the A701 route place limitations on the ability to provide an improved direct route;
 - Option does not strongly support the Transport Planning Objectives but could perhaps be provided as part of Option 6 (Re-opening Beattock railway station) if that were progressed, to enable active travel to the station from Moffat.
- 4.4.7 In addition, given the Public Social Partnership work currently being undertaken to explore healthcare and social transport solutions as discussed above, no further exploration of Option 5 has been undertaken within this study.

4.4.8 The options being taken forward to Part 1 Appraisal are therefore:

- **Option 1a:** Dedicated bus service operating between Moffat / Beattock and Lockerbie Railway Station, integrated with train times
- **Option 1b:** Adjustment of Service 380 bus times to reduce interchange time at Lockerbie Railway Station and service operating hours extended later into the evening
- **Option 3:** Increased direct buses to Edinburgh – increase in frequency of Service 101 with a service every 2 hours during the day and evenings Monday – Sunday
- **Option 6:** Re-open Beattock Railway station

5 Part 1 Appraisal

5.1 Methodology

5.1.1 STAG sets out a range of criteria against which options should be appraised at Part 1. These include appraisal against:

- **Transport Planning Objectives;**
- **STAG criteria** (Environment, Economy, Safety, Integration and Accessibility and Social Inclusion);
- **Affordability** – which has focussed on:
 - For the bus options (Options 1a, 1b and 3), consideration of: costs of vehicle acquisition; ongoing annual operating and maintenance costs; and fare box revenue, and consideration of the level of subsidy which would be required to operate these services;
 - For the Beattock Railway Station option (Option 6), a high-level costing exercise for the construction of a new station; and costing for mitigation measures (signalling etc.);
- **Public Acceptability;** and
- **Feasibility:** which has specifically considered the Beattock Railway Station option (Option 6) where understanding the following was key:
 - Initial analysis of existing and potential future capacity on the rail routes including consideration of the existing and potential future timetables;
 - The effects of providing a new station on the wider rail network;
 - In the longer term:
 - Development of an initial understanding of how a potential extension of High Speed Rail (HS2) into Scotland may impact on the West Coast Main Line (WCML). This seeks to understand how any changes may impact on the use of the GSWL;
 - Initially exploring the potential impact of the Scotland Route Study proposals on both the WCML and GSWL in relation to both passenger and freight services; and
 - As appropriate, exploration of the potential use of the station as rail freight hub (as well as passenger station).

5.1.2 The STAG scoring criteria has been used to assign scores to the criteria for each option using the STAG scoring scale as shown in Table 5.1.

Table 5.1: STAG Scoring

-3	-2	-1	0	1	2	3
Major Cost or Negative Impacts	Moderate Cost or Negative Impact	Minor Cost or Negative Impact	No Benefit or Impact	Minor Benefit	Moderate Benefit	Major Benefit

5.2 Do Minimum & Reference Case

- 5.2.1 As noted in Section 4.2, there are no committed transport improvements in the study area, and the 'Do Minimum' and 'Reference Case' for this study represent one and the same – i.e. the continuation of the current situation.

5.3 Appraisal Against the Transport Planning Objectives

- 5.3.1 A qualitative appraisal of the options against the study TPOs have been undertaken and is shown in Table 5.2.
- 5.3.2 The TPOs are predominantly concerned with increasing the accessibility to and from Moffat and Beattock. As such, appraisal undertaken as part of the STAG Accessibility and Social Inclusion criteria and the Integration criteria has been used to undertake the appraisal against the TPOs. This is presented in Appendix I and Appendix J .

Table 5.2: Part 1 Appraisal Against the TPO – Key Points

Option	TPO		Key Points	Score
1a	1	Enable an effective day trip by public transport to key education, retail and social opportunities in Glasgow, Edinburgh and Carlisle	<p>In the AM period (made at approximately 08:00), the differential between car and public transport journey time to Carlisle is reduced by approximately 35 minutes (such that public transport travel time is only ten minutes longer than the equivalent trip by private car) and reduced by approximately 40 minutes to Edinburgh (such that public transport travel time is around only ten minutes longer than the equivalent trip by private car).</p> <p>In the PM period (made at approximately 17:00) the differential between car and public transport journey time to Carlisle is reduced by approximately 35 minutes (such that public transport travel time is only six minutes longer than the equivalent trip by private car) and reduced by approximately 55 minutes to Edinburgh (such that public transport travel time around only ten minutes longer than the equivalent trip by private car).</p> <p>In the evening period (made at approximately 20:00) the differential between car and public transport journey time to Carlisle is reduced by approximately 45 minutes (such that public transport travel time is only 13 minutes longer than the equivalent trip by private car) and reduced by approximately 2 hours 20 minutes to Edinburgh (such that public transport travel time is around ten minutes longer than the equivalent trip by private car).</p> <p>Additionally, the option will provide public transport access to an additional 3 outbound rail services and 10 inbound services, particularly those running early in the morning and late in the evening. The significantly reduced journey time and increased accessibility to additional rail services is likely to enable more effective day trips to Edinburgh and Carlisle.</p>	2
	2	Provide public transport connectivity which enables travel to and from the area across the day and across the week	The option would provide a service connecting from the study area to Lockerbie covering the rail operating day and enabling access to and from early morning and late evening services at Lockerbie, extending the hours in the day over which it is possible to make a trip.	2
	3	Increase the inbound public transport catchment to support local businesses through increased visitors to the area	The option is likely to provide an increase in the number of people able to access Beattock and Moffat from further afield. The option provides improved connectivity and reduced access time from the West Coast Main Line rail network for travel to / from further afield. The new service enables access to an additional 10 inbound services at Lockerbie Railway Station, meaning Beattock and Moffat are more	2

Option	TPO		Key Points	Score
			easily accessible. This will provide much improved connectivity for tourists into the area, supporting local businesses and the overall economy of the area.	
1b	1	Enable an effective day trip by public transport to key education, retail and social opportunities in Glasgow, Edinburgh and Carlisle	<p>Overall the option has benefits to trips to Edinburgh and Carlisle with a reduced overall travel time by public transport in the afternoon and evening period (although the improvements are less than Option 1a).</p> <p>In the PM period the differential between car and public transport journey times to Carlisle and Edinburgh are both reduced by approximately 30 minutes such that public transport travel time is approximately only 10 minutes longer (to Carlisle) and 35 minutes longer (to Edinburgh) than the equivalent trip by private car.</p> <p>In the evening period the differential between car and public transport journey time to Carlisle is reduced by approximately 45 minutes (such that public transport travel time is only around 10 minutes longer than the equivalent trip by private car) and reduced by approximately 2 hours 10 minutes to Edinburgh (such that public transport travel time is around 20 minutes longer than the equivalent trip by private car).</p> <p>Public transport travel times to Glasgow are not improved in the AM or PM period due to the existing X74 bus service offering quicker journey times. A benefit is however seen in the evening period, where the option provides a reduction in public transport journey time of just under 2 hours. Overall the option is therefore likely to enable a more effective day trip to Edinburgh and Carlisle.</p>	1
	2	Provide public transport connectivity which enables travel to and from the area across the day and across the week	The option permits return to Moffat / Beattock from a further 10 rail services (i.e. those after 18:00), which are currently inaccessible without private transport.	1
	3	Increase the inbound public transport catchment to support local businesses through increased visitors to the area	The option is likely to provide a small increase in the number of people able to access Beattock and Moffat from Edinburgh with the option enabling access to an additional 10 inbound services at Lockerbie Railway Station. This will provide an element of improved connectivity for tourists into the area, supporting local businesses and the overall economy of the area.	1

Option	TPO		Key Points	Score
3	1	Enable an effective day trip by public transport to key education, retail and social opportunities in Glasgow, Edinburgh and Carlisle	The option will provide much improved flexibility in time of travel both to and from Edinburgh, therefore enabling more effective day trips to and from the capital. The option does not provide any improved access to either Carlisle or Glasgow.	2
	2	Provide public transport connectivity which enables travel to and from the area across the day and across the week	The additional instances of the service on weekdays as well as on Saturdays and Sundays enables travel to and from the area to Edinburgh across the day and across the week. The option does not provide any improved connectivity to either Carlisle or Glasgow.	2
	3	Increase the inbound public transport catchment to support local businesses through increased visitors to the area	The option is likely to provide a small increase in the number of people able to access Beattock and Moffat from Edinburgh given the increased connectivity. This will provide an element of improved connectivity for tourists into the area, supporting local businesses and the overall economy of the area. However, the journey time from Edinburgh by bus to the area is still long (2 and 1/2 hours) and may not encourage additional visitors despite the improved flexibility in time of travel.	1
6	1	Enable effective day trip by public transport to key education, retail and social opportunities in Glasgow, Ayr, Edinburgh and Carlisle	<p>The option provides large reductions in public transport travel time when a rail connection is possible.</p> <p>Consideration of the potential rail timetable developed (as shown in Appendix G.7 and discussed in greater detail in the Feasibility Appraisal in Section 5.5), shows for travel to Glasgow the option offers a rail service at around 07:30 from Beattock which arrives into Glasgow around 08:20. In the return direction, the option offers a return trip just before 7pm. This makes for an effective day in Glasgow with just 1 hour 40 minutes of travel time in total. While the X74 bus service offers connectivity at present, the total travel time for a return journey to Glasgow would be over 3 hours, meaning a much earlier start and later finish to enable the same amount of time in the city.</p> <p>For travel to Edinburgh, the service would offer connectivity to access Edinburgh for around 08:30. A return trip would be possible just after 6pm, making for an effective day in Edinburgh with just 1 hour 45 of travel time in total. The current 101 bus service offers access to Edinburgh at present, but the total travel time for a return journey is around 5 hours, and the lack of services means users as consigned to</p>	3

Option	TPO	Key Points	Score
		<p>departing on the very early 06:00 bus and returning on the 17:20 from Edinburgh (not arriving back to Beattock until 19:45).</p> <p>No direct access is at present available to Carlisle and the journey time by public transport is around 1 and 1/4 to 2 hours depending on time of travel equating to potentially 4 hours of travel time for a return trip. With the option in place, Carlisle can be reached in less than 40 minutes and by 08:30 in the morning, with the last return trip at around 22:15 back to Beattock, making for a very effective day in Carlisle with just 1 hour 20 of travel time.</p>	
2	Provide public transport connectivity which enables travel to and from the area across the day and across the week	<p>The option provides an additional travel mode connection to Glasgow, Edinburgh and Lockerbie on a weekday / Saturday (note that the Sunday timetable was not developed for the appraisal).</p> <p>The option extends the operating day for connecting with Lockerbie, with coverage providing connectivity much later into the evening. Note that this also provides the same access back from Carlisle as all Lockerbie rail services also stop at Carlisle. While the option does not extend the hours over which is it possible to access Glasgow (given the existing X74), the start time of the journey to Glasgow by rail could be much later than that if travelling by bus, given the much reduced journey time.</p>	2
3	Increase the inbound public transport catchment to support education, tourism and local businesses	<p>The option is highly likely to provide a significant increase in the number of people able to access Beattock and Moffat from further afield. The option provides much reduced journey times from Edinburgh, Glasgow and Carlisle to the area opening up the opportunity for day trips to the area. This is likely to encourage tourists into the area, supporting local businesses and the overall economy of the area.</p>	3

5.4 STAG Criteria

5.4.1 This section presents the appraisal against the STAG criteria:

- Environment;
- Safety;
- Economy;
- Integration; and
- Accessibility and Social Inclusion.

Environment

5.4.2 Table 5.3 shows the Part 1 appraisal against the Environment criteria.

Table 5.3: Part 1 Appraisal Against the STAG Environment Criteria – Key Points

Option	Key Points	Score
1a	It was noted during the study baselining exercise that private car ownership and use is high in the study area. The options are likely to encourage some minor modal shift from private car to bus and rail. As a result, there will be some minor benefit to the environment through a reduction in vehicle emissions and noise. The bus service will use the current road network and as such there will be little adverse impact on the environment.	1
1b		1
3	The option is unlikely to encourage significant modal shift from private car to bus as the journey time to Edinburgh will still be substantially longer than that by car. The bus service will use the current road network and as such there will be little adverse impact on the environment.	0
6	<p>The construction of the railway station at Beattock may have adverse effects on the environment during construction and there may also be long-term noise impacts in the area close to the station due to train deceleration and acceleration. The option does not involve the running of additional trains (just an additional stop for existing trains) and therefore there will be little adverse impact on the environment in terms of emissions. It was noted during the baselining stage of the study that private car ownership and use is high in the study area. Any modal shift to rail that could be achieved would reduce car use and associated noise and emissions.</p> <p>If people currently drop family / friends at Lockerbie station this requires a 50km round trip. Each journey transferred to Beattock station, if it opened, would save both 100km of car travel (drop off and pick up return trips) and the associated driver time. In addition, for those currently driving to Lockerbie station and leaving their car, transfer to Beattock station would free up parking spaces at Lockerbie, as well as reducing car miles by around 50km (for the outward and return trip to the station).</p>	-1

Safety

5.4.3 Table 5.4 shows the appraisal against the Safety criteria.

Table 5.4: Part 1 Appraisal Against the STAG Safety Criteria – Key Points

Option	Key Points	Score
1a	Any modal shift to sustainable transport that may be achieved would reduce private vehicles on the road network which has the potential to reduce traffic accidents, although the reduction is anticipated to be minor.	1
1b	The options would offer and increase in perceived personal security through reducing the often long wait time at the station (for departures) or at the bus stop (for rail arrivals). This is likely to be reduced most greatly with the dedicated service as in Option 1a. This may be particularly beneficial to more vulnerable members of society such as the elderly, those less able and older unaccompanied children.	0
3	There is unlikely to be any significant modal shift to sustainable transport as travel by private car will still be quicker. As such, it is unlikely that there would be any major reduction in private vehicles on the road network with therefore limited impact on traffic accident rates and travel security.	0
6	Any modal shift to rail that may be achieved would reduce private vehicles on the road network which has the potential to reduce traffic accidents, although the reduction is anticipated to be minor.	1

Economy

5.4.4 Table 5.5 shows the appraisal against the Economy criteria.

Table 5.5: Part 1 Appraisal Against the STAG Economy Criteria – Key Points

Option	Key Points	Score
1a	<p>The option may provide some minor benefit to the economy by improving the accessibility of employment and retail in Edinburgh and Carlisle as well as improving the accessibility of Moffat to tourists, which would benefit the local economy.</p> <p>However, increasing the accessibility of Edinburgh and Carlisle may have a negative impact on the local economy if people are more readily able to travel further afield to retail and social opportunities.</p> <p>While the overall travel time to Edinburgh is reduced, the improved connection to Lockerbie does not provide a travel time that could be considered suitable for daily commuting (around 1 hour 45 minutes) and as such the option is unlikely to offer any increase in the employment opportunities for those living in the study area.</p> <p>For travel to Carlisle however, the option provides a journey time of around an hour (down from around 90 minutes). This travel time could now be considered suitable for daily commuting and may open up new employment and educational opportunities in Carlisle.</p> <p>It is important to note that changing working habits do however mean that some people do not attend their official place of work on a daily basis, and therefore are more likely to consider travelling further/for longer on a few days of the week. As such, there is greater flexibility for the travel time to be</p>	2

	longer than commonly considered acceptable if making a trip every day i.e. someone may accept a commute time of 90 minutes if they are only making the trip 3 days a week, whereas someone commuting every day may only accept a much shorter travel time. In this regard, improved access to Edinburgh would be highly beneficial for accessing jobs and higher education.	
1b	The option may provide some minor benefit to the economy by improving the accessibility of employment and retail in Carlisle and Edinburgh but with the increased accessibility less than that offered by Option 1a.	1
3	The option may provide some benefit to the economy by improving the accessibility of social and retail facilities in Edinburgh, while also increasing the accessibility of the area to tourists. Later operating hours for bus services would also enable visitors to the town to stay for a longer time period, thus additionally boosting the local economy.	1
6	<p>The option has the potential to provide major benefit to the economy by improving the accessibility of employment and retail in Carlisle, Edinburgh and Glasgow. Journey times to these cities are significantly reduced and rail times would allow for very effective commuting for both employment and education.</p> <p>However, increasing the accessibility of locations further afield may have a negative impact on the local economy if people are more readily able to more easily travel further to retail opportunities.</p> <p>The increased accessibility is likely to encourage increased tourist numbers to the study area through enabling day trips to the area from the Central Belt and from the south, providing benefit to the local tourist economy. There may also be potential for improved transport links to encourage businesses in the area.</p>	3

Integration

- 5.4.5 Analysis has been undertaken, specifically focusing on transport integration (as opposed to land-use or policy integration) including:
- Potential transport integration benefits between bus and rail modes; and
 - The impact of reduced interchange time on journey times by sustainable transport.
- 5.4.6 Options 1a and 1b seek to directly provide integration benefits between bus and rail modes. As such, the integration analysis has focussed on these two options.
- 5.4.7 In order to understand the integration benefits that may be generated in terms of improved integration between bus and rail modes, both current and 'with option' bus and rail timetables have been examined to establish interchange times at Lockerbie railway station for both departing and arriving passengers on the railway network.
- 5.4.8 The analysis is presented in Appendix J .
- 5.4.9 Table 5.6 shows a summary of the analysis as well as appraisal of the options against the land-use and policy elements of the Integration criteria.

Table 5.6: Part 1 Appraisal Against the STAG Integration Criteria – Key Points

Option	Key Points	Score
1a	<p>The degree of integration of bus and rail connections is highly variable at present (e.g. on average it takes almost two hours to travel from Beattock by bus to board a train to Edinburgh but approximately 1 hour 10 mins to get back to Beattock having alighted from a train from Edinburgh). As such, proportional journey time savings are variable also. Nevertheless, averaging inbound and outbound trips, the option is expected to reduce the average public transport journey time between Beattock and Lockerbie arrivals/departures by 30 minutes for trains to/from Carlisle, and by circa 50 minutes for travel to/from Edinburgh and Glasgow trains.</p> <p>Additionally, the option will provide public transport access to an additional 3 outbound rail services and 10 inbound services.</p> <p>Improving the public transport network and transport integration supports the aims of the National Transport Strategy, SWestrans Regional Transport Strategy, the Bus Action Plan and the Local Transport Strategy. The option is therefore aligned with the broader policy goals included within key national, regional and local policy documents.</p>	3
1b	<p>Overall, this option has negligible impact upon connections between Beattock and rail services to Carlisle / the south, compared with existing trips - with a slight decrease in length of average outbound trip and slight increase in inbound trips.</p> <p>Notable improvements in outbound trips to Edinburgh are anticipated, with average journey times reducing from almost two hours to one hour; however conversely, average inbound trips are expected to increase in length (22 minutes) due to how the bus timetable has been optimised.</p> <p>Similarly, integration improvements are highly mixed for connections with Glasgow rail services - with negligible impact on outbound services but circa a 45-minute improvement for inbound services. Additionally, this option permits return to Beattock from a further 10 rail services (i.e. those after 18:00), which are currently inaccessible without private transport.</p> <p>Improving the public transport network and transport integration supports the aims of the National Transport Strategy, SWestrans Regional Transport Strategy, the Bus Action Plan and the Local Transport Strategy. The option is therefore aligned with the broader policy goals included within key national, regional and local policy documents.</p>	2
3	<p>This option does not generate any specific transport integration benefits but improving the public transport network supports the aims of the National Transport Strategy, SWestrans Regional Transport Strategy, the Bus Action Plan and the Local Transport Strategy. The option is therefore aligned with the broader policy goals included within key national, regional and local policy documents.</p>	1
6	<p>Provision of the railway station itself does not offer any direct mode-to-mode integration benefits, but the rail network is an integrated network and providing a station opens up access to the UK wide integrated rail network. Provision of the railway station itself does not offer any direct mode integration benefits. However, the development of a station with suitable facilities for cycle parking, and with safe and secure walking access routes has the potential to integrate rail and active travel modes.</p> <p>It is also assumed that a shuttle bus and existing buses would serve the station and offer bus to rail integration benefits. This will be particularly</p>	2

Option	Key Points	Score
	<p>important for Beattock Railway Station given the wide rural area it may serve i.e. it will be the closest railway station for those in Moffat, for whom a walk to the railway station will not be possible by foot and in many instances by bike (for those a further distance from the station), given the distance.</p> <p>In addition, improving the public transport network and transport integration supports the aims of the National Transport Strategy, SWestrans Regional Transport Strategy, the Bus Action Plan and the Local Transport Strategy. The option is therefore aligned with the broader policy goals included within key national, regional and local policy documents.</p>	

Accessibility and Social Inclusion

- 5.4.10 Note that the TPOs set for the study relate to improving accessibility and the appraisal against this STAG criterion should be read in tandem with that presented for the TPOs.
- 5.4.11 The accessibility benefits arising from each option have been considered through consideration of the potential reductions in journey time, and therefore the increased accessibility, from Beattock / Moffat to key destinations relevant to each option. In addition, the increase in opportunity to travel, through increased service frequency or earlier/later running travel provision has also been considered. All analysis for existing journey times assumes rail and bus timetables as at December 2016, when this analysis was undertaken.

Option 1a and 1b: Improved access to the rail network

- 5.4.12 A lack of direct public transport travel routes was identified as a key problem during the early stages of the study. Options 1a and 1b consider improved direct access from Moffat and Beattock to the railway network, seeking to address the problem. Existing journey times from Moffat and Beattock to key destinations on the railway network (Lockerbie, Carlisle, Edinburgh and Glasgow) have been considered alongside estimated journey times to these key destinations with the options in place. Appendix I shows the analysis for the options for:
- An AM trip (made at approximately 08:00);
 - A PM trip (made at approximately 17:00); and
 - An evening trip (made at approximately 20:00).
- 5.4.13 For the existing travel time, the travel time has been considered by car, bus only, and by a combination of bus and train.
- 5.4.14 Analysis of the change in the public transport to car travel time differential (i.e. the difference in journey time between a trip by public transport and the same trip by car, in both the existing and option situation) has also been undertaken i.e. how much more 'competitive' does the option make public transport. This analysis is also presented in Appendix I .
- 5.4.15 The TPOs set for the study all consider improved accessibility to the area. The key points made in the appraisal against the TPOs should be read in conjunction with the further comments in relation to the appraisal of the options against the accessibility and social inclusion criteria, as presented in Table 5.7.

Table 5.7: Part 1 Appraisal Against the STAG Accessibility and Social Inclusion Criteria – Key Points

Option	Key Points	Score
1a	<p>With Option 1a, in the AM period, the journey time to Carlisle by public transport is just 10 minutes longer than the equivalent trip by private car, only 6 minutes longer in the PM period and 13 minutes longer in the evening period.</p> <p>For trips to Edinburgh, the option provides reductions in public transport travel time in the AM period (40 minutes) and the PM period (55 minutes), and evening period (2 hours 20). In the AM, PM and evening periods, the journey to Edinburgh by public transport is around just 10 minutes longer than the equivalent trip by private car.</p> <p>Public transport travel times to Glasgow are not improved in the AM or PM period due to the existing X74 bus service offering quicker journey times. A benefit is however seen in the evening period, where Option 1a provides a reduction in public transport journey time of just under 2 hours.</p> <p>The baselining stage of the study identified the proportion of people aged 16-24 is lower in the study area than the local authority average, suggesting that there may be some out-migration of younger people from the area.</p> <p>Option 1a provides reduced journey times to Carlisle and Edinburgh across the day, and to Glasgow in the evening period. Option 1b also provides reductions in travel time but to a lesser extent. The reduced travel times would provide improved public transport access to employment, education and leisure and social opportunities in Carlisle with journey times with Option 1a around 1 hour.</p> <p>These improvements are particularly beneficial to:</p> <ul style="list-style-type: none"> • Those on lower incomes for whom owning a car is not possible due to the costs involved; • Those less-abled for whom driving is not an option; • Children under the age of 17. 	2
1b	<p>For those without access to a car or for whom driving is not possible, the reduced journey times may widen the employment opportunities for those resident in the study area. This may reduce out-migration of the younger population and may also support the tourist industry in the area.</p> <p>The travel time to Edinburgh under Option 1a is significantly reduced, but the travel time is still around 1h 45 minutes across the day which is unlikely to be acceptable for a daily commute for employment or education. However, as noted for the Economy criteria, changing working habits do however mean that some people do not attend their official place of work on a daily basis, and therefore are more likely to consider travelling further/for longer on a few days of the week. In this regard, improved access to Edinburgh would be highly beneficial.</p> <p>A key benefit of improved accessibility to and from the study area will be in reducing the feelings of remoteness of the community and enabling local people to feel connected and part of a wider Scotland. This is especially important in terms of the long term sustainability of the community and the retention of younger people in the area.</p>	1

Option	Key Points	Score
3	<p>The option would provide improvement in public transport access to leisure and social opportunities in Edinburgh given the increased opportunities to travel and therefore travel time flexibility. This would be particularly beneficial to those without access to a car or for whom driving is not possible.</p> <p>The option is particularly beneficially to those without a private car or unable to drive. This includes:</p> <ul style="list-style-type: none"> • Those on lower incomes for whom owning a car is not possible due to the costs involved; • Those less-abled for whom driving is not an option; • Children under the age of 17. <p>The Pre-Appraisal stage of the study identified the proportion of people aged 16-24 is lower in the study area than the local authority average, suggesting that there may be some out-migration from the area. It was also identified that there are limited direct public transport services to Edinburgh which limits the scope for commuting and travel for leisure.</p> <p>The improved access may help may reduce out-migration of the younger population.</p> <p>However, those without access to a car or unable to drive are still highly disadvantaged as the long travel time to Edinburgh by bus is unchanged.</p> <p>Given the unchanged long journey time (around 2 hours 15 minutes), the option is unlikely to increase the accessibility of employment opportunities, however, as noted above, changing working habits which reduce the number of commuting days may mean this is more acceptable in enabling employment and education opportunities to be taken up.</p>	2
6	<p>Much reduced travel time to Glasgow and Edinburgh (both of which can be reached in around an hour in the morning) and Carlisle (travel time now under 40 minutes) would offer particular benefits:</p> <p>Increased access by public transport to job opportunities in Carlisle, Edinburgh and Glasgow, now all within what is likely to be considered a suitable commuting distance. This is particularly beneficially to those without a private car or unable to drive. This includes:</p> <ul style="list-style-type: none"> • Those on lower incomes for whom owning a car is not possible due to the costs involved; • For the elderly who have stopped driving and those with greater healthcare needs for whom the improved access may enable improved accessibility to the major hospitals in Edinburgh and Glasgow; • Those seeking Higher Education opportunities; • Children under the age of 17 through providing an increased ability to travel independently, providing access to a greater range of extra-curriculum and social activities in which to participate in Glasgow, Edinburgh and Carlisle; <p>The much improved accessibility would support the tourist industry in the local area. The existence of a railway station raises the profile of an area and may be significant in attracting a greater number of tourists to the area.</p>	3

Option	Key Points	Score
	<p>It should be noted that the station is located 4.5km from the more major community in Moffat, which presents an accessibility issue for those less abled and the elderly.</p> <p>In addition to the comments for the TPOs it is important to note that a key benefit of improved accessibility to and from the study area will be in reducing the feelings of remoteness of the community and enabling local people to feel connected and part of a wider Scotland. This is especially important in terms of the long term sustainability of the community and the retention of younger people in the area. The option provides better equality of access to all enabling fair access to the wider opportunities.</p>	

5.5 Feasibility Appraisal

Bus Feasibility Considerations

- 5.5.1 A key issue for consideration in relation to the bus options, is whether they could be run commercially or need subsidy to operate. In general, as with many other rural areas, the bus network in Dumfries and Galloway operates with a large number of services requiring either part or full subsidy.
- 5.5.2 It is clear that the legalities surrounding the implementation of bus services which may need some level of subsidy to operate pose key deliverability issues. This was discussed in detail in Section 2.5.

Option 1a: Dedicated direct bus service operating between Moffat, Beattock and Lockerbie Railway Station

What problem is the option setting out to address?

- 5.5.3 Option 1a aims to provide direct and well integrated bus access to the WCML (at Lockerbie Railway Station) primarily for travel to Glasgow and Edinburgh to the north, and to Carlisle and further destinations to the south. This bus service would be timed to provide good integration with as many departing and arriving rail services at the station as possible reducing wait time at the station for either departing trains or when alighting from arriving trains.

What are the current travel options to Lockerbie?

- 5.5.4 Currently, the journey time by car between Beattock / Moffat and Lockerbie Railway Station is around 20 minutes from Beattock and 22 minutes from Moffat, with the equivalent journey time by bus, on the 380 service (and then walk) around 30 minutes from Beattock and 35 minutes from Moffat. It should be noted that the 380 bus runs hourly on Monday to Saturday in the morning peak but only every 2 hours between 09:30 and 14:30, with a service approximately every 90 minutes between 15:45 and 18:30, with around 18:30 the last service running. There is a very limited Sunday service.
- 5.5.5 While parking directly at Lockerbie Railway Station is constrained, there is free parking within a 5 -10 minute walk of the station on residential streets and at public car parks (McJarrow Park and corner of Well Rd) although both require a potentially difficult interchange for those with mobility issues. The greater certainty of making a connection when accessing the station by car (rather than relying on both the bus and train to be on time) and the much quicker access time by private car (20 minutes by car compared to 30-35 minutes by bus) means the potential market for a direct bus is likely to be those without access to a private vehicle (or potentially those with access to a car who prefer to travel free by bus using a National Entitlement Card). At the last

census only 19% of households in Beattock / Moffat did not have access to a car (against a Dumfries and Galloway average of 22%) making the potential market for this service very small.

- 5.5.6 For those without access to a car and reliant on public transport, the quickest way to access Lockerbie Railway Station is using the 380 bus service.
- 5.5.7 It is therefore possible to access Lockerbie station at present using public transport, so the option would not provide a new connection as such.

Legal Context

- 5.5.8 The existing Service 380 which routes between Beattock, Moffat and Lockerbie operates with full subsidy. As such, the introduction of a new service would not be operating in competition with a commercially run service. However, there is likely to be an impact on the existing 380 service. The service routes from Moffat and Beattock through smaller communities (Wamphray, Johnstonebridge etc.) and a reduction in patronage may require additional funding to support the service, impacting on public funding and potentially leading to reductions in subsidised services elsewhere as a result.

Option 1b: Adjustment of Service 380 bus times to reduce interchange time at Lockerbie Railway Station and service operating hours extended later into the evening and Option 3: Increased direct buses to Edinburgh – increase in frequency of Service 101 with a service every 2 hours during the day and evenings Monday – Sunday

- 5.5.9 Option 1b and 3 do not involve providing new services and as such there are no legalities around their implementation.

Rail Feasibility Considerations

Option 6: Re-open Beattock Railway station

- 5.5.10 For Option 6, in relation to the feasibility of the railway station re-opening, the following was considered, with full details in Appendix G :
- How an extension of High Speed Rail 2 (HS2) into Scotland may impact on the West Coast Main Line, the opportunities that would enable and the steps which might be required to engage;
 - The potential impact of the Scotland Route Study proposals on both the West Coast Main Line and Glasgow South West Line in relation to both passenger and freight services;
 - Existing and potential future capacity on the rail route;
 - The effects of providing any new station(s) on the wider rail network;
 - The potential use of the stations as rail freight hubs (as well as passenger stations); and
 - Potential train timetables.
- 5.5.11 In summary, the work highlighted:
- In the short term, issues for the provision of a train service to call at a re-opened Beattock station are challenging, as there are implications to other train services;
 - Realistically it is unlikely that there will be any calls at a new Beattock Railway Station in the TransPennine services. The priority for operators is reducing journey times to compete

with air travel, and any extra station calls are more likely to favour Motherwell as this is likely to generate significantly more passengers;

- A train service for Beattock is therefore more likely to be delivered in the longer term by the defined 'Scotland Route Study' Stirling – Coatbridge – Motherwell – Carlisle 'opportunity to travel'², which will be slightly less time critical.
- It should be noted that, as a principle, the concept of new cross border ScotRail services has already been accepted by Scottish Government as witnessed by their support for the stations at East Linton and Reston and the associated local Edinburgh – Berwick local service³.
- The wider generic mis-match between passenger station and freight railheads on the modern railway, means there is no potential for a dual-use freight-passenger facility at Beattock, and there are potential conflicts between the siting of a passenger station and its operational impact on freight operations which should be taken into account in any further development of a passenger station.
- That it has not been possible to offer a plausible train service using the existing (May 2018) WCML train services.

5.5.12 A notional train timetable has been prepared for appraisal purposes only and is provided in Appendix G .

Feasibility Appraisal Summary

5.5.13 Table 5.8. summarises the key feasibility issues.

Table 5.8: Part 1 Appraisal Against the Feasibility Criteria – Key Points

Option	Key Points
1a	<p>From an engineering perspective, the option does not require the build of any infrastructure or any land purchase and as such is unlikely to present any physical feasibility challenges.</p> <p>The introduction of the new service is likely to impact on the existing 380 service. The service routes from Moffat and Beattock through smaller communities (Wamphray, Johnstonebridge etc.) and a reduction in patronage may require additional funding to support the service, impacting on public funding and potentially leading to reductions in services elsewhere as a result.</p> <p>As intonated by bus stakeholders and SWestrans, the overall viability of services in the region is, in many cases, only achievable due to the resource intensive nature of overall bus operations. As such, the overall bus network and operation across the region is highly fragile and even minor changes to routes or services (or any new competition between services), which have the potential to tie up resources or affect patronage, can have major consequences. This is a very important factor when considering any changes to the network which may impact on existing services.</p>
1b	<p>From an engineering perspective, the option does not require the build of any infrastructure or any land purchase and as such is unlikely to present any physical feasibility challenges.</p>

² <https://cdn.networkrail.co.uk/wp-content/uploads/2016/11/Scotland-Route-Study.pdf>

³ <https://www.transport.gov.scot/news/transport-minister-comments-on-east-linton-and-reston-stations/>

Option	Key Points
3	<p>From an engineering perspective, the option does not require the build of any infrastructure or any land purchase and as such is unlikely to present any physical feasibility challenges.</p>
6	<p>There are many changes likely to take place on the WCML during the gestation period of a potential new railway station at Beattock, and trying to identify specific paths for new train services or the impact of additional calls in existing services, is unlikely to inform future options.</p> <p>At the strategic level, the addition of calls at a re-opened Beattock Railway Station by TransPennine trains could, if planned now, be done with the minimum impact on the timetable structure, although it would potentially impact adversely on journey times effecting the ability of rail to compete with the air travel market.</p> <p>Whilst it would be possible to call at Beattock Railway Station instead of another smaller station (either Lockerbie or a smaller Cumbrian station) there would be a loss of service/revenue elsewhere which may be bigger than the benefits arising at Beattock.</p> <p>In the long term however, there is an opportunity to explore the potential for a new station at Beattock through consideration of the Scotland Route Study defined Stirling – Carlisle via Coatbridge service. This would comprise a new train service to serve Lockerbie and Motherwell, which could also call at a very limited number of other stations (existing or new) between Motherwell and Carlisle. The service will not require any additional infrastructure for it to operate. The major risk to delivery will be capacity on the WCML, however because the service would avoid the very congested areas around Haymarket/Waverley and Glasgow Central it would be slightly easier to plan than additional services to Edinburgh and Glasgow. Considering existing train running times, there are potentially considerable journey time savings to be had from a new direct train service and as the area to be served is right between (so furthest from) the two main Scottish airports it could provide an opportunity to compete for long distance travel along this corridor.</p> <p>From an engineering perspective, the station will require: two platforms whose length will likely need to be longer than has been provided at most new stations; a Cross-track, DDA compliant footbridge; and passenger facilities (including waiting shelters, Customer Information System (CIS), Public Address (PA) and CCTV systems with one ticket machine). There is likely to be a need to modify the Overhead Line Equipment (OLE) to meet the specific standards that now apply at stations. Depending on where the station is sited, upgrades will be required to provide suitable access. The station would serve a wide rural area and bus access will be required. Considerable car parking is also required to serve the wide rural area.</p>

5.6 Affordability

5.6.1 The **affordability** appraisal has focussed on:

- For the **bus options** (Options 1a, 1b and 3), consideration of: operating and maintenance costs; fare box revenue; and the level of subsidy which would be required to operate new services; and
- For the **railway station option** (Option 6): a high-level costing exercise for the construction of a new station; and costing for mitigation measures (with the latter considered in collaboration with Network Rail and other stakeholders).

Bus Options Affordability Methodology

5.6.2 For the bus options, the methodology adopted has been to design service schedules for each of the options and then to estimate the resources required to deliver them. These have then been costed using PBA's bus industry costing model, calibrated for local labour rates. For Option 1a and 1b, which seek to integrate bus and rail times, the schedules have been designed with rail departure and arrival times in mind.

5.6.3 Where sufficient base data exists, demand and passenger fares revenue have then been estimated and the results compared to the costs to establish the viability of each option. In cases where there is insufficient base demand data, 'break-even' analysis has been undertaken to establish how many passengers would be required for the service to achieve viability.

Option 1a: Provision of a dedicated bus service operating between Moffat, Beattock, and Lockerbie Railway Station, integrated to reduce interchange times between bus and rail

5.6.4 Three buses would be required to operate the rail link service between Moffat, Beattock and Lockerbie on Monday to Sunday (and 2 buses on a Sunday). Total operating hours would be 8,900 per year.

5.6.5 Applying the model cost rates, annual cost of service provision for Option 1a would be approximately £345k.

5.6.6 There is insufficient data available to forecast demand for the service; therefore, a break-even analysis has been undertaken to identify the number of passengers that would be required for the service to cover its costs and reach viability. To do this, an average single fare has been estimated through consideration of the cost of an adult single and return fare, a child return fare, the prevailing concession reimbursement rate and the proportion of trips made by adults, children and concessionary pass holders (split taken from the National Travel Survey). An average single fare of £2.14 per passenger has been estimated.

5.6.7 Dividing the annual costs of £345k by the average fare of £2.14 means that the service would require 160,000 single trips annually to break even.

5.6.8 The Office of Rail and Road's (ORR) estimates of station usage for 2014-2015 shows total annual passengers station entries and exits of approximately 215,000 at Lockerbie Railway Station.

5.6.9 The National Rail Travel Survey (NRTS, 2007)⁴ shows that 10% of users accessing a railway station arrive by bus/coach. Rural areas and small towns will typically have a lower share of bus-based access to railway stations than this due to the nature of the rural bus network. For

⁴ <http://www.transport.gov.scot/system/files/documents/reports/NRTSProvisional2007.pdf> - Table 6

example, bespoke surveys of passengers at rural stations previously undertaken by the team have shown a bus access mode share of 5% or less.

- 5.6.10 Assuming that 5% of passengers at Lockerbie Railway Stations arrive/depart by bus equates to a total of 10,750 passengers annually arriving or departing by bus. The required number of passengers for the Beattock service to break even is far in excess of this (160,000) and therefore the service is highly unlikely to be commercially viable.
- 5.6.11 The bus schedule for the option has been designed such that the service operates over the full existing operating day. It may be possible to 'scale back' the number of connecting bus services to concentrate on peak time rail arrivals/departures only to minimise the cost of the service and hence make the service more likely to be commercially viable/require a lesser subsidy.

Option 1b: Adjustment of Service 380 bus times to reduce interchange time at Lockerbie Railway Station and extended service operating hours later into the evening

- 5.6.12 The amendment of Service 380 to provide better rail connections requires an additional bus resource, and additional operating hours of approximately 5,500 hours.
- 5.6.13 The total annual cost of service provision for Option 1b would be approximately £50k.
- 5.6.14 This would require approximately 23,500 additional single trips annually to break even (an additional 65 passenger trips a day). As there are 21 bus services operating each weekday, equating to an additional 3 passengers per service. It is anticipated that this would be achievable if rail and bus times were better integrated.

Option 3: Increased direct bus services to Edinburgh

- 5.6.15 The enhancement of Service 101 to give a two hourly frequency on Monday to Saturday and Sunday, including an evening service would require one additional bus in the service schedule, and 4 additional buses on a Sunday. There would be an additional 17 operating hours per day, Monday to Saturday and 35 hours on Sunday across all operating buses.
- 5.6.16 The total annual cost of service provision for Option 3 would be £225k per annum.
- 5.6.17 Annual patronage for the services is 198,123, taken from SWestrans' records.
- 5.6.18 Research by TRL⁵ shows that changes in service demand are directly proportional to changes in the level of service provision, with an average factor of 0.4 That is, a 10% increase in service leads to a 4% increase in demand, all else being equal.
- 5.6.19 Applying an elasticity factor of +0.4 gives 22,500 additional passengers.
- 5.6.20 The net cost of the service is known to be £391k (from SWestrans' records). If the PBA costing model rates are applied to the existing service, gross cost would be £795k, meaning revenue is £404k. Dividing this figure by current annual patronage gives an average fare of £2.04 which means annual revenue from the service enhancements would be £46k.
- 5.6.21 Comparing annual costs of £225k and total revenue of £46k, Option 3 would incur annual losses of £179k, would not be commercially viable and would require subsidy to operate.

⁵ The Demand for Public Transport, TRL Report 593, TL, 2004

Option 6: Re-open Beattock Railway Station

Station Construction Cost

5.6.22 Some key features at most or all stations are:

- **Land costs:** although this is probably not a significant cost at Beattock;
- **Access to public roads:** although this should not be a significant cost at Beattock as the railway is quite close to the main road;
- **Size of car parks:** proportional to its size, Beattock will require a significant car park, bus/taxi stances, pick up/set down space as it serves a large rural area potentially reaching into the central Borders;
- **Length of platforms:** at least 150m required at Beattock and possibly longer, depending on the emerging train plan from TransPennine – longer than most recent new stations or those under construction in Scotland;
- **Cross-track, DDA compliant, footbridge:** generally, a standard design so similar costs at sites that need independent cross-track access. This could be quite a long bridge crossing four tracks;
- **Overhead Line Equipment (OLE):** Masts may need to be moved away from the track and the wire height may need to be raised to deliver new standard electrical clearance. The solution being developed for the proposed new station at Robroyston is to use new portal structures, set back behind the platforms;
- **Passenger Facilities:** will be similar at all new (small) stations, some being linked to the number of platform. Facilities will include waiting shelters, Customer Information System (CIS), Public Address (PA) and CCTV systems. Ticket Machines would tend to be provided at a base level of one per station;
- **Access to build:** where the level of complexity is driven by reduced working time due to the regular passage of trains which drives costs up. At Beattock this will be a significant factor as the WCML is heavily used throughout the day, including through the night. Access issues also drive Train Company compensation costs, which can be substantial. However as there are plans for major upgrades elsewhere along the route this might offer a window when access to build the station is at a much lower cost; and
- **Signalling:** There may be requirements to move signals as there is point-work close by, which requires the provision of signals. This can add significantly to the cost and also impact on the timescales to deliver the project.

Comparative Costs

5.6.23 Appendix H presents a summary of the detail of a number of stations currently being constructed, or recently reopened - note that pedestrian access and any new footbridge/underpass will be to full Mobility Impaired Access (MIA) standards. The data suggests outturn costs for these stations in the range **£8m - £14m**.

Beattock Railway Station Capital Construction Cost

5.6.24 Of particular note is that:

- **Consideration would need to be given as to exactly where the station would be located** including whether it is on the fast tracks or the loop lines;

- **There is likely to be a need to modify the Overhead Line Equipment (OLE)** to meet the specific standards that now apply at stations. The particular issues are wire heights through stations which have recently been revised and can result in the need for the contact wires to be much higher than hitherto has been the case. With the complexity of the track layout in the Beattock area, the raising of wire heights is likely to impact on a wider area than just around the station site and be disruptive and expensive;
- The **land value will be relatively low**, but not negligible as there is industrial use close to the potential station area;
- The **public road** is not far away but **will require upgrades and new access**; and
- **The platforms may need to be longer** than have been provided at most new stations.

5.6.25 For Beattock taking into account the need to make an allowance for OLE alterations this suggests costs at the higher end of the cost range with the recent announcement about Robroyston suggesting something in the **£14m - £15m** range to include an allowance for significant OLE alteration.

5.6.26 Given the station is located around 4.5km from Moffat a shuttle bus type offering would need to be provided to enable appropriate access to the station from the village. The cost for this has been estimated at £123k annually (assuming a service which operates to provide connections to all the arriving and departing trains).

Potential Catchment

5.6.27 In order provide an indication of the catchment area for a potential Beattock Railway Station, analysis has been undertaken mapping the population catchment areas for existing railway stations in the region, and then repeated with Beattock Station assumed to be operational.

5.6.28 Figure 5.1 and Figure 5.2 show the existing and 'with station' catchment areas respectively (mapped with no 'cap' on the drive time to the nearest station). The analysis shows:

- A potential Beattock Railway Station catchment population of 7,800 (with no limit on drive time to the station); and
- A potential Beattock Railway Station catchment population of approximately 5,900 (if a 30-minute drive time 'cap' to the station is assumed).

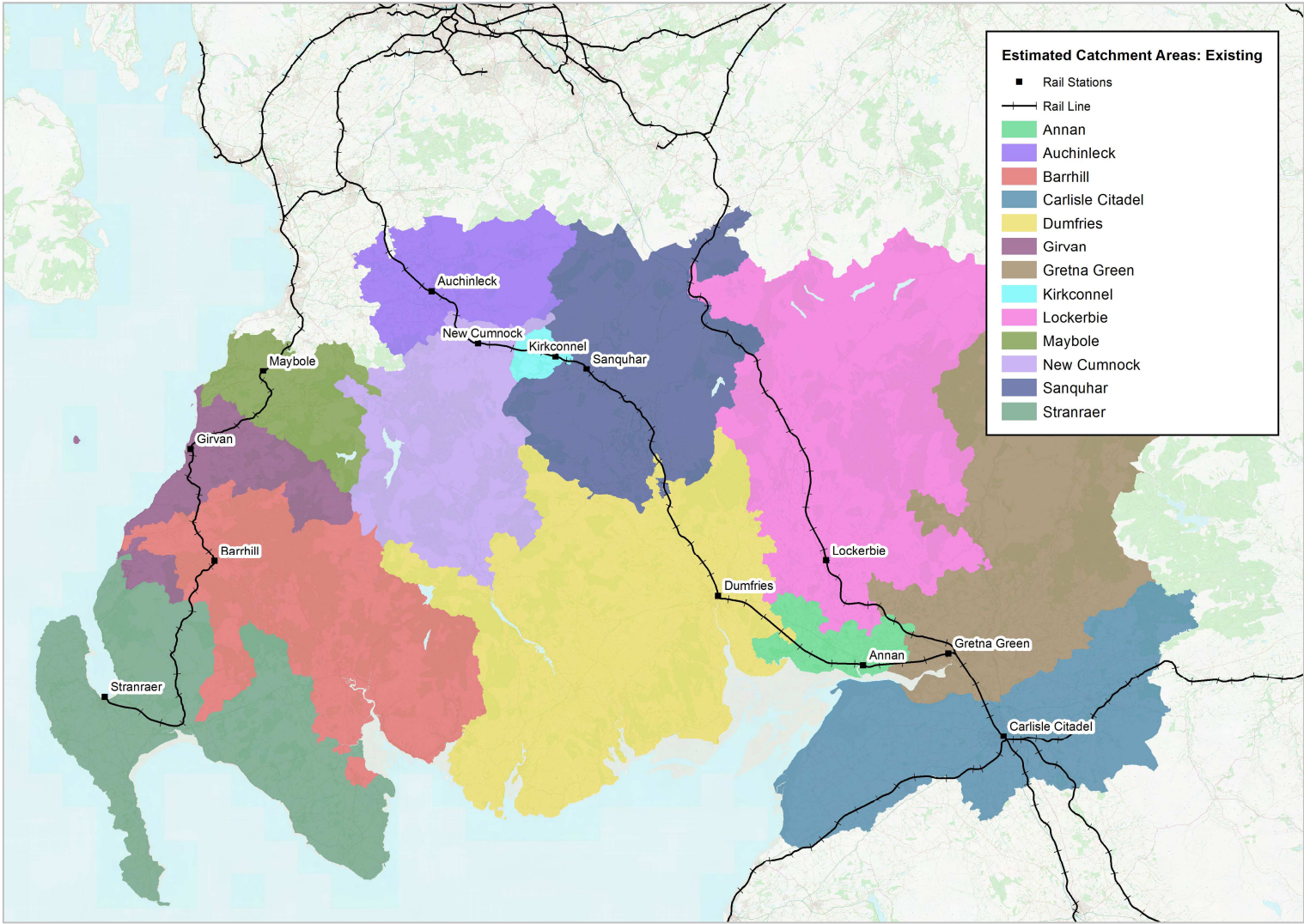


Figure 5.1: Existing Railway Station Population Catchment Areas (uncapped drive time)

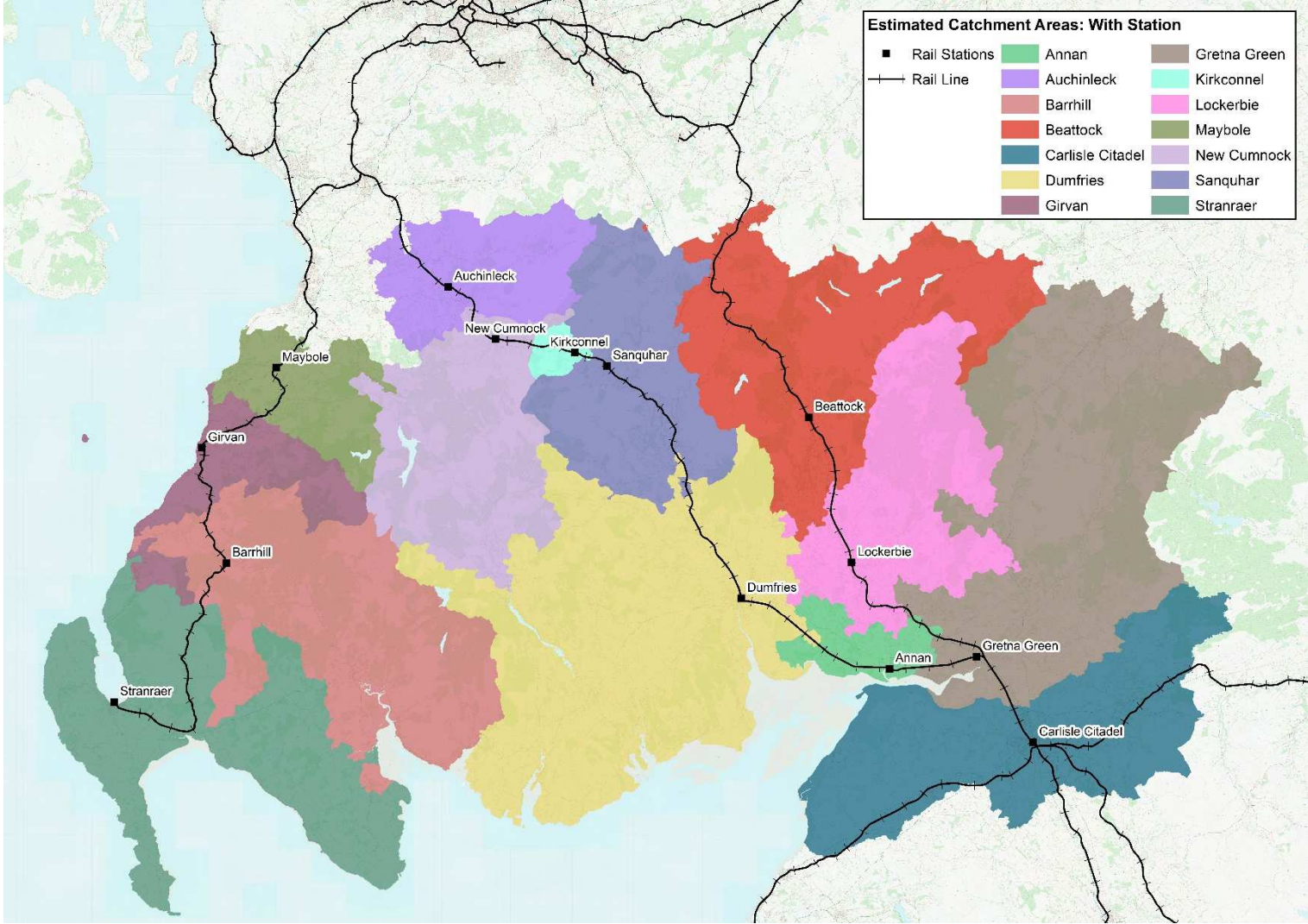


Figure 5.2: With Beattock Station - Railway Station Population Catchment Areas (uncapped drive time)

5.6.29 The key points in relation to the affordability appraisal are presented in Table 5.9.

Table 5.9: Part 1 Appraisal Against the Affordability Criteria – Key Points

Option	Key Points
1a	<p>Analysis shows that the service is unlikely to generate sufficient demand to cover operating costs and as such is not considered to be commercially viable unless the service is subsidised. SWestrans’s budget for the operation of subsidised bus services has recently reduced. It is therefore unlikely that funding is available to operate the service.</p> <p>The bus schedule for the option has been extended to extend the service over the full existing operating day. It may be possible to ‘scale back’ the number of connecting bus services to concentrate on peak time rail arrivals/departures only to minimise the cost of the service and hence make the service more commercially viable/require a lesser subsidy.</p> <p>The potential impact on the existing Service 380 requires consideration as patronage from this service is likely to be taken, impacting on the subsidy requirements of the service.</p>
1b	<p>The amendment of Service 380 to provide better rail connections requires an additional bus resource, and additional operating hours of approximately 5,500 hours. The total annual cost of service provision would be £50k. This would require approximately 23,500 additionally passenger trips annually to break even (an additional 65 passenger trips a day). As there are 21 bus services operating each weekday (departures and arrivals), this equates to an additional 3 passengers per service. It is anticipated that this could be achievable if rail and bus times were better integrated.</p>
3	<p>The analysis undertaken shows the option would incur annual losses of £179k and would not be viable.</p> <p>SWestrans budget for the operation of subsidised bus services has recently reduced. It is therefore unlikely that subsidy funding is available to operate the improved service.</p>
6	<p>It should be noted that in terms of the cost of the station build:</p> <ul style="list-style-type: none"> • It is not clear exactly where the station would be located, including whether it is on the fast tracks or the loop lines; • There is likely to be a need to modify the overhead line equipment (OLE) to meet the specific standards that now apply at stations. The particular issues are wire heights through stations which have recently been revised and can result in the need for the contact wires to be much higher than hitherto has been the case. With the complexity of the track layout in the Beattock area, the raising of wire heights is likely to impact on a wider area than just around the station site and be disruptive and expensive; • The land value will be relatively low, but not negligible as there is industrial use close to the potential station area; • The public road is not far away but will require upgrades and new access; and • The platforms will likely need to be longer than have been provided at most new stations. <p>The option requires the build of the railway station requiring two platforms whose length will likely need to be longer than has been provided at most new stations; a Cross-track, DDA compliant footbridge; and passenger facilities (including waiting</p>

Option	Key Points
	<p>shelters, Customer Information System (CIS), Public Address (PA) and CCTV systems with one ticket machine).</p> <p>Taking into account the need to make an allowance for OLE alterations suggests a cost in the £14m - £15m range to include an allowance for significant OLE alterations that applies to new stations.</p>

5.7 Public Acceptability

5.7.1 Table 5.10 shows the appraisal against the Public Acceptability criteria.

Table 5.10: Part 1 Appraisal Against the STAG Public Acceptability Criteria – Key Points

Option	Key Points
1a	<p>Public transport integration was highlighted in the public consultation exercise undertaken during the initial stage of the study. As the option offers direct connections between bus and rail with good integration of the bus and rail timetables, it is likely to carry a low public acceptability risk.</p> <p>Furthermore, the public consultation highlighted sentiment that the biggest transport problem faced by respondents was limited travel mode choice. Improving access to the rail network is likely to therefore be publicly acceptable, although there may be disappointment that a railway station in Beattock itself is not provided.</p>
1b	<p>The improvements under Option 1b to better integrate with rail times may seem very minor and not be seen to offer any significant benefits. Existing service users of the 380 bus service who are affected by timetable adjustments may also not welcome any change to the service if it negatively impacts upon their journeys.</p>
3	<p>The public survey undertaken during the initial stage of the study highlighted service frequency as one of the most significant problems faced when travelling by bus. Improved access to Edinburgh with a greater bus frequency was noted as an opportunity to increase the accessibility of education and social and retail opportunities. The option is therefore likely to be accepted by the public.</p>
6	<p>The option is likely to be widely accepted by the local public given the survey responses during the initial public engagement which showed the strong sentiment for this option. The Beattock Railway Station Action Group is active in the area campaigning for the reinstatement of the railway station, further highlighting a local desire to see the station re-opened.</p> <p>However, in the medium term, if the station were to be re-opened, with the timetable adjusted to be served at the expense of some calls at Lockerbie, there would be a loss of service frequency and connectivity at Lockerbie station which would be unpopular with the current users of Lockerbie for whom a new station at Beattock would not be beneficial. The service pattern and users trip origins would dictate the level of overall public acceptability.</p> <p>In addition, the reinstatement of the station may impact on existing commercial and subsidised bus services between Moffat / Beattock and Lockerbie, Glasgow and Edinburgh. If these services were reduced as a result of increased competition from rail, users of these services who do not have ease of access to the rail network would see their services reduce, reducing their overall accessibility.</p>

5.8 STAG Criteria Appraisal Summary

- 5.8.1 Appendix K shows the Appraisal Summary Tables (ASTs) for all options in full, with Table 5.11 showing a summary of the scoring for each option against all the appraisal criteria.

Table 5.11: Appraisal Summary Table - Part 1 Appraisal Score Summary

		Transport Planning Objectives			STAG Criteria				
		TPO1	TPO2	TPO3	Environment	Safety	Economy	Integration	Accessibility & Social Inclusion
Option	Description	Enable an effective day trip by public transport to key education, retail and social opportunities in Glasgow, Edinburgh and Carlisle	Provide public transport connectivity which enables travel to and from the area across the day and across the week	Increase the inbound public transport catchment to support local businesses through increased visitors to the area	Environment	Safety	Economy	Integration	Accessibility & Social Inclusion
1a	Dedicated bus service operating between Beattock and Lockerbie Railway Station, integrated with train times	2	2	2	1	1	2	3	2
1b	Adjustment of Service 380 bus times to reduce interchange time at Lockerbie Railway Station and extended service operating hours later into the evening	1	1	1	1	0	1	2	1
3	Increased direct bus services to Edinburgh	2	2	1	0	0	1	1	2
6	Re-open Beattock Station	3	2	3	-1	1	3	2	3

5.9 Option Selection or Rejection

5.9.1 Table 5.12 shows whether each option has been selected or rejected at this stage of the appraisal.

Table 5.12: Key Appraisal Findings

Option	Option Description	Key Appraisal Findings	Select or Reject
1a	Dedicated bus service operating between Beattock and Lockerbie Railway Station, integrated with train times	<ul style="list-style-type: none"> • Scores well against the TPOs • Significant reduction in access times to/from departing and arriving trains at Lockerbie • Additional public transport access to a number of inbound and outbound rail services at Lockerbie • Significantly reduced journey times between Moffat / Beattock and Carlisle and Edinburgh with journey time to Edinburgh by public transport around just 10 minutes longer than the equivalent trip by private car • To provide a direct service routeing between Moffat, Beattock, and Lockerbie that would encourage use would require a reasonably direct service – potentially routeing via the A74(M) motorway. A direct service of this nature which missed out some of the smaller communities of Wamphray and Johnstonebridge would be unlikely to be commercially viable given the subsidy requirements of the existing Service 380 which serves these communities • The route would be in direct competition with the existing Service 380. Implementing a new direct service would impact on the patronage of the existing 380 service, likely reducing the overall patronage and subsequently increasing the subsidy required for the service. This may have knock on implications on the on-going viability of the existing service if the increased subsidy required is not available • Would require subsidy • Likely to be publicly acceptable as poor public transport integration was highlighted during public consultation 	Select
1b	Adjustment of Service 380 bus times to reduce interchange time at Lockerbie Railway Station and extended	<ul style="list-style-type: none"> • Reduction in overall travel time to Edinburgh and Carlisle in the afternoon and evening period • Enables access to an additional 10 inbound services at Lockerbie Railway Station • Likely to be publicly acceptable as poor public transport integration was highlighted during public consultation however, the improvements may 	Select

Option	Option Description	Key Appraisal Findings	Select or Reject
	service operating hours later into the evening	<p>seem very minor and not be seen to offer any significant benefits</p> <ul style="list-style-type: none"> • Scores positively, but low, against the TPOs • Unlikely to provide any significant change in transport connectivity to the area 	
3	Increased direct buses to Edinburgh – increase in frequency of Service 101 with a service every 2 hours during the day and evenings Monday – Sunday	<ul style="list-style-type: none"> • Scores well against the TPOs • Provides far greater flexibility in travel to Edinburgh across the day and across the week, although does not reduce journey time • Would require subsidy • Likely to be acceptable to the public given service frequency was noted in the Public Survey one of the most significant problems faced when travelling by bus 	Select
6	Re-open Beattock Railway Station	<ul style="list-style-type: none"> • Scores highly against all the TPOs • Significantly reduced travel time to Edinburgh, Glasgow and Carlisle – quicker than by car • Additional modal choice for travellers • Reduced travel times opens up opportunities for employment and education in Edinburgh, Glasgow and Carlisle with acceptable daily commute times • Likely to impact on the existing X74 bus service to Glasgow, although the rail service from Beattock would not operate later into the evening than the X74 services • Likely impact on the existing 101 bus service to Edinburgh • Likely to provide a very significant increase in the number of people able to access the study area from further afield, supporting the key tourist industry in the area • High local public acceptability of the option likely given outcomes of public survey, but users of Lockerbie may not favour the option given the reduced rail service offering at Lockerbie • Impacts to existing users of Lockerbie station (with reduced connections) given altered timetable patterns, if this was how a service to Beattock was delivered 	Select

5.10 Further Engagement and Option Development

5.10.1 Given the points raised during the Part 1 appraisal, a stage of further option development was undertaken in light of the outcomes, in order to better define the options for appraisal at STAG Part 2. This was undertaken through further discussions with the client and key stakeholders.

5.10.2 The main thrust of the further option development involved engagement including:

- A workshop with SWestrans and Dumfries and Galloway Council Officers (Transportation, Planning, Environment and Economic Development officers) to discuss all the options and fully explore the benefits and issues associated with each;
- In relation to the **bus options**, face-to-face meetings with SWestrans and Stagecoach (West Scotland), with the discussions focussing on:
 - Establishing views on the feasibility of the proposed new service timetables and route changes;
 - Discussing the outcomes of the Part 1 commercial viability appraisal work;
 - Discussing potential grant/subsidy requirements; and
 - Discussing the potential to alter the proposed options to adjust services at specific times of day to concentrate on peak time services only to minimise the cost of the new/altered services and move closer to commercial viability.
- In relation to the **rail option**, engagement was undertaken, via email, with:
 - Network Rail;
 - ScotRail;
 - Virgin Trains;
 - TransPennine Express
- Email correspondence with South Lanarkshire Council.

5.10.3 Appendix L presents the comprehensive outcomes of the engagement with the key points discussed here.

Option 1a and Option 1b: Direct bus service operating between Moffat, Beattock, and Lockerbie Railway Station

5.10.4 Given the outcomes of the Part 1 appraisal and the further engagement noted above, the option was felt to be unlikely to be deliverable in its current form. Therefore, a variant of Option 1a and 1b was discussed and agreed with SWestrans.

Variant Option

5.10.5 An important point to note is that the existing Service 380 which routes between Moffat, Beattock and Lockerbie operates with full subsidy across the week. To provide a direct service routeing between Moffat, Beattock and Lockerbie that would encourage use would require a reasonably direct service – potentially routeing via the M74 (M) motorway (as shown in Figure 5.3). A direct service of this nature which missed out some of the smaller communities of Wamphray and Johnstonebridge would be highly unlikely to be commercially viable given the subsidy requirements of the existing Service 380 which does serve these communities. Furthermore,

implementing a new direct service would impact on the patronage of the existing 380 service, likely reducing the overall patronage and subsequently increasing the subsidy required for the service. This may have knock on implications on the on-going viability of the existing 380 service if the increased subsidy requirements cannot be met.

5.10.6 Option 1b considered adjusting the times of the existing Service 380 to reduce interchange time between bus and train at Lockerbie Railway Station and extending service operating hours later into the evening to enable sustainable travel access to later running trains. Service 380 already runs with full subsidy so increasing the number of instances of the service will require further subsidy.

5.10.7 However, one potential variant of the options that would reduce conflict with the existing Service 380 would be to consider a combination of Option 1a and 1b as a new 'combined' option. The new option, Option 1a/b would comprise:

- A revised Service 380 with:
 - Adjusted times on existing instances of the service to better link with rail departure / arrival times; and
 - Additional 'direct' instances of the service which would 'in-fill' between existing services. These additional direct services would route between Moffat / Beattock and Lockerbie via the M74 (M) i.e. the new 380 timetable would include instances of the service routeing via the smaller communities of Whamprey and Johnstonebridge (as existing) and faster direct services which would not serve these smaller communities – but would appeal to residents of the larger communities of Moffat and Beattock.

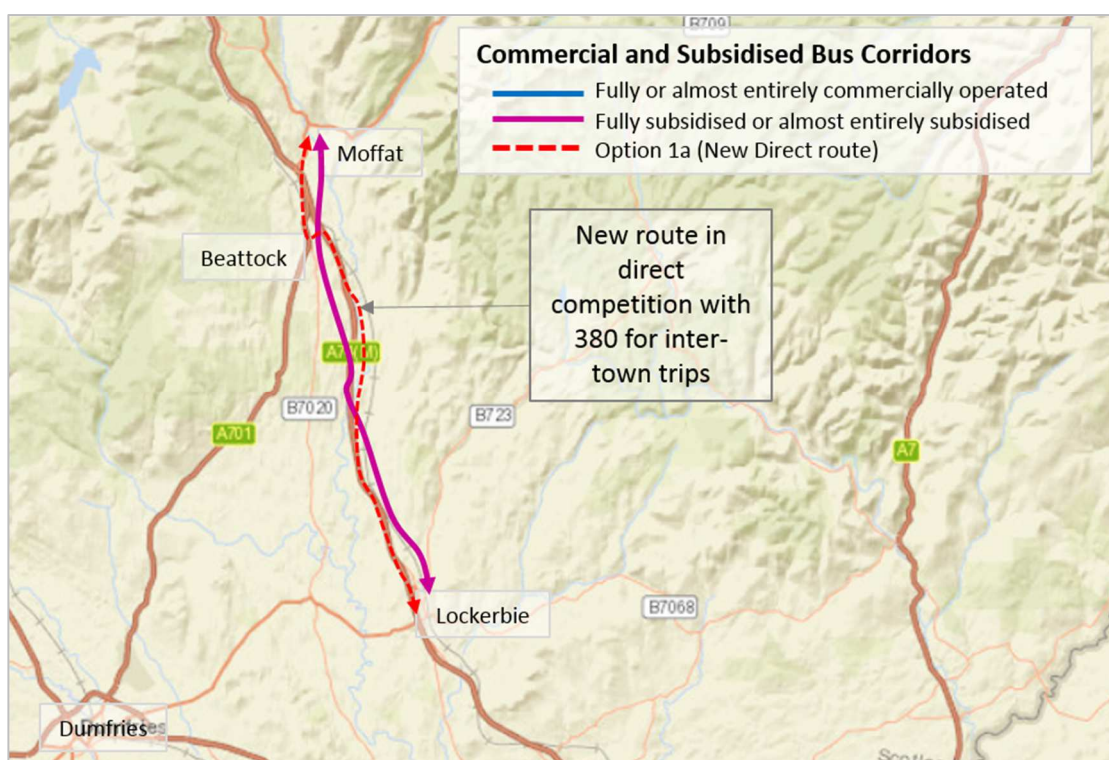


Figure 5.3: Commercial Vs. Subsidised bus operations – Option 1a

Conclusion

5.10.8 Given the combination of the potentially low demand and the impacts on the existing Service 380, it is considered that Option 1a is not deliverable in its current form. The option is therefore combined with Option 1b to create a **new Option 1a/b** as described above.

Option 6: Re-open Beattock Railway Station

5.10.9 To inform discussion with rail industry stakeholders, two key option development tasks were undertaken:

- **Engineering Feasibility Work** – which involved a site visit to Beattock to establish the potential viability for a railway station within or close to the village with key considerations including station access from the road network. A paper was produced which was provided to the stakeholders for comment and this is provided in Appendix M . Three possible sites for the station were considered (as shown in Figure 5.4). The work highlighted:
 - **Site A** (to the south of Beattock village) requires access through the village and past the school, but it has plenty of space for car parking and could possibly be built without the need of a footbridge and associated lifts.
 - **Site B** (the former station site) is quite constrained in terms of car parking space and also by the housing area. More space could be created by moving either or both Network Rail and other industrial activity, but at a cost.
 - **Site C** (to the north of the village) has some difficulties, both with railway works and access and no obvious advantages, so is discounted.
 - Access to a station site from the west of the railway line (the village side of the line) is preferable, to avoid a narrow rail overbridge and sharp road bend with poor visibility;
 - Site A (to the south of Beattock) and Site B (the former station site) could both be considered as possible station sites, with a clear set of requirements and criteria to inform the decision.

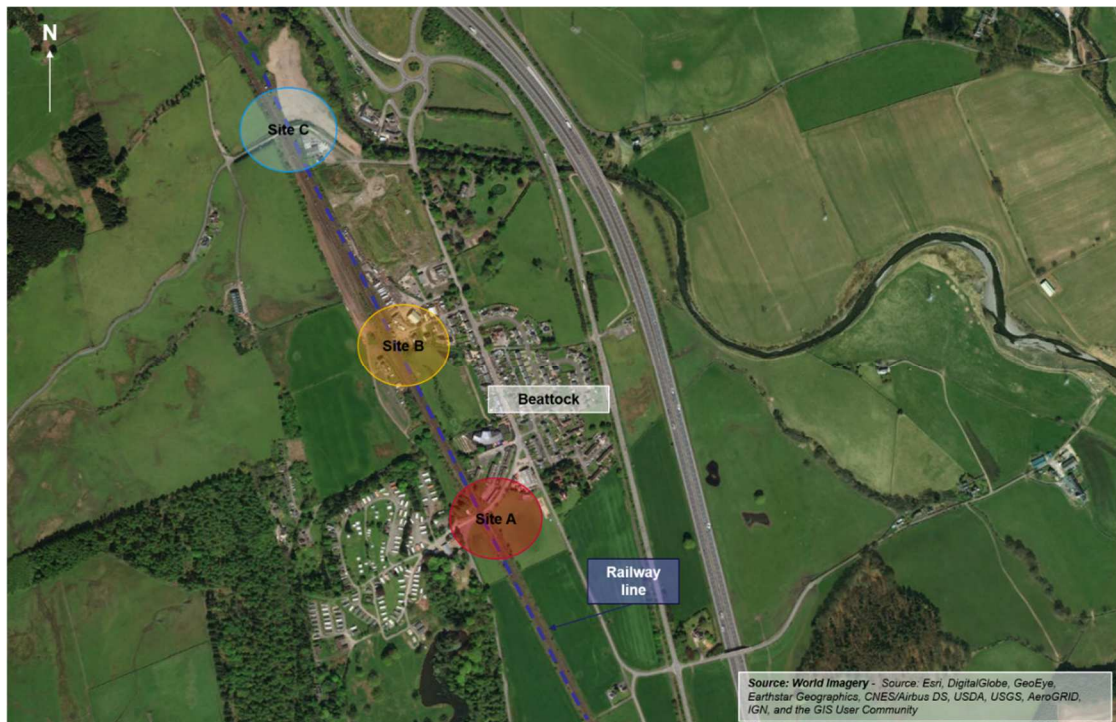


Figure 5.4: Potential Station Sites

- **Development of a potential timetable for the WCML** which included a stop at Beattock and this is set out in Appendix G . The timetable was shared with the stakeholders for comment. The work highlighted:
 - That it has not been possible to offer a plausible train service using the existing (May 2018) train services (although this could be subject to change in the future);
 - There may be opportunities to provide train services that could call at Beattock, but this will be in the longer term and part of a wider requirement, as envisaged in the Scotland Route Study; and
 - Notional train services have been prepared for appraisal purposes only and assumed that existing services would alter stopping patterns to alternate between stops at Lockerbie and Beattock, therefore having no impact on journey time between Carlisle and Glasgow and Edinburgh.

5.10.10 As noted above, Appendix L presents the comprehensive outcomes of the engagement. The key points raised were:

- The introduction of a railway station at Beattock is likely to impact on the existing commercially operated Service 380 (running from Moffat / Beattock to Lockerbie). The subsidy required to operate the service may need to be increased, impacting on the already constrained subsidy budget. If the service offering were reduced this would impact on the smaller communities on the route;
- Both existing operators on the WCML who pass through Beattock (TransPennine and Virgin Trains) have no appetite to stop at Beattock given their focus as inter-city operators.
- There is limited flexibility in existing timetables to add additional stops and the only way a call at Beattock could be accommodated would possibly be at the expense of a Lockerbie call;

- The timetable developed to include Beattock was considered appropriate and at a level of detail suitable for this stage in the project lifecycle by the rail industry stakeholders;
- Providing calls by existing TransPennine services that pass Beattock station was not felt to offer any benefit in the short term to South Lanarkshire residents - the vast majority of travel to work patterns of local residents with the exception of 'no fixed place of work' is in a northerly direction.

5.10.11 Overall, it was therefore considered feasible for Option 6 to be considered further at Part 2 Appraisal, but acknowledging the difficulties in train timetabling, and with cognisance taken of the key points noted above.

6 Part 2 Appraisal

6.1 Introduction

6.1.1 The STAG Part 2 Appraisal phase requires a more detailed appraisal of the options taken forward from Part 1 and it includes detailed appraisal of the selected option's performance against the:

- TPOs;
- STAG criteria;
- Cost to Government; and
- Risk and Uncertainty.

6.2 Options for Appraisal

6.2.1 Given the outcomes of the further option development, the options to be appraised at STAG Part 2 are noted in Table 6.1.

Table 6.1: STAG Part 2 – Options for Appraisal

Option	Option Description	Comment
1a/b	Adjustment of Service 380 bus times to reduce interchange time at Lockerbie Railway Station, additional direct instances of the service, and extended service operating hours later into the evening.	The revised option includes a revised Service 380 with: <ul style="list-style-type: none"> ▪ Adjusted times on existing instances of the service to better link with rail departure / arrival times; and ▪ Additional 'direct' instances of the service which would 'in-fill' between existing services. These additional direct services would route between Moffat / Beattock and Lockerbie via the M74.
3	Increased direct bus services to Edinburgh	The option assumes: <ul style="list-style-type: none"> ▪ Increase in frequency of Service 101 with a service every 2 hours during the day and evenings Monday – Sunday.
6	Re-open Beattock Railway Station	The site visit findings established that: <ul style="list-style-type: none"> ▪ There are two possible options for the station site: 1) at a new site to the south of the village; or 2) at the site of the former station to the west of the village - where additional land would be available for a car-park; ▪ A rail overbridge would be required for both locations. <p>In terms of the station, it is assumed that the station is located at either of the two potential sites, operating as a two-platform station.</p>

Option	Option Description	Comment
		<p>Medium and long term strategies are assumed:</p> <ul style="list-style-type: none"> ▪ Medium Term: Calls by existing TransPennine Express Services using a notional timetable as presented in Appendix G . ▪ Long Term: Calls by a new Stirling – Carlisle service (as per Scotland Route Study <i>Opportunity to Travel by 2043</i>), with an indicative timetable as presented in Appendix G . <p>For the purposes of Part 2 appraisal, the medium term potential has been considered i.e. stopping existing train service. The longer term option could however be revisited at a future date closer to the date when the opportunity to travel was identified in the Scotland Route Study (2043).</p>

6.3 Data Collection

Station Usage Surveys – Lockerbie Station

6.3.1 In order to assess the likely demand for travel from a new railway station at Beattock, PBA commissioned ProTel Fieldwork to undertake boarding/alighting counts and platform interview surveys at Lockerbie Railway Station. Lockerbie was selected as the best fit for a comparator station for Beattock. The data has been used in the development of a Demand Forecasting Tool to forecast revenue and travel time benefits, as discussed in Section 6.6. This section presents the high level findings of the surveys. Appendix N presents the full survey analysis in detail.

6.3.2 Two types of surveys were undertaken. These were as follows:

- Passenger Counts
 - Survey teams undertook passenger counts from 0700-1400 on Monday 29th and Tuesday 30th January and from 0830-1530 on Saturday 3rd February 2018 at Lockerbie Station.
 - Surveyors counted how many passengers boarded and alighted all trains which visited the station during the survey period.
 - These counts allowed a sample rate to be estimated for the platform surveys.
- Platform Interview Surveys
 - Survey dates and times were as per platform surveys.
 - Surveyors asked departing passengers about their current journey and wider usage of Lockerbie station. Where it was not possible to survey all passengers during the time available, passengers were provided with a paper survey and return envelope.

6.3.3 A total of 356 passengers boarded trains departing from Lockerbie and 22 passengers alighted at Lockerbie over the survey period. Platform passenger interviews were completed with 159 of the departing passengers, but two of the surveys had to be discarded due to multiple errors, meaning that the true sample size was 157. This represents a high sample rate of circa 45%.

6.3.4 Detailed analysis of the survey results can be found in Appendix N with the key points being:

- Weekend demand is approximately 20% higher than weekday demand at Lockerbie. This shows a more consistent daily profile than many other local stations.
- Throughout the week, 70-80% of trips to/from Lockerbie are made to destinations in the North (e.g. Edinburgh or Glasgow). The most common destinations for travel from Lockerbie were found to Edinburgh, Glasgow and Carlisle.
- Lockerbie station has a very large catchment area compared to other local stations, extending from Sanquhar to Kirkcudbright and into northern England. This illustrates the attractiveness of the station in providing access to local and long-distance rail services.
- The majority of people (78%) use a car to access Lockerbie Station and 14% walk, while lower percentages of 7% and 5% travel by bus and taxi respectively. The high proportion of car users aligns with the large catchment area.
- During the week 56% of rail trips recorded from Lockerbie were being made for work or education purposes. This value drops to 5% at the weekend.
- Almost 75% of respondents explained that they chose to use the train because it was quicker than the alternative travel options.
- Approximately 85% of respondents were found to be employed or in education.
- Respondents were more likely to have access to a car than the Lockerbie average – 88% of respondents have one or more cars in their household versus the Lockerbie average of 75%.

6.4 Option Appraisal

6.4.1 The following section presents the appraisal of the options against the STAG Part 2 criteria:

- TPOs;
- STAG criteria;
- Cost to Government; and
- Risk and Uncertainty.

6.5 Appraisal against the Transport Planning Objectives

6.5.1 The outcome of the appraisal of the options against the TPOs is shown in the section which follows, with the detailed supporting analysis shown in Appendix O. Firstly, the overall approach to each is described.

Transport Planning Objective 1: Appraisal

Enable an effective day trip by public transport to key education, retail and social opportunities in Glasgow, Edinburgh and Carlisle

6.5.2 TRACC accessibility software was used to consider existing and 'with option' journey times in the morning period (08:00 – 12:00) from Beattock / Moffat to:

- Glasgow;

- Edinburgh; and
 - Carlisle.
- 6.5.3 The reverse trip from the three strategic locations to Beattock / Moffat in the afternoon / evening period (16:00 – 20:00) was also considered.
- 6.5.4 A similar assessment was also undertaken considering Lockerbie, in order to provide a comparator location.
- 6.5.5 The time periods considered sought to identify whether the transport option would enable an effective day trip to the strategic locations such that a meaningful amount of time could be spent in undertaking activities in the visited location.

Transport Planning Objective 2: Appraisal

Provide public transport connectivity which enables travel to and from the area across the day and across the week

- 6.5.6 This TPO has been assessed through consideration of:
- The earliest available northbound and southbound connections *from* Beattock / Moffat to Edinburgh, Glasgow and Lockerbie in both the existing and 'with option' situations; and
 - The latest available northbound and southbound connections *to* Beattock / Moffat from Edinburgh, Glasgow and Lockerbie in both the existing and 'with option' situations.

Transport Planning Objective 3: Appraisal

Increase the inbound public transport catchment to support local businesses through increased visitors to the area

- 6.5.7 TRACC accessibility software was used to consider the number of people who can reach Beattock and Moffat within 1 hour and 2 hours both in the existing situation and with the options in place in the morning period (08:00 – 12:00). This provides an indication as to the accessibility of Beattock and Moffat for those coming into the area.
- 6.5.8 The key points relating to each option are shown in the table below.

Table 6.2: Part 1 Appraisal Against the TPO – Key Points

Option	TPO		Key Points	Score
1a/b	1	Enable effective day trip by public transport to key education, retail and social opportunities in Glasgow, Edinburgh and Carlisle	<p>The analysis undertaken highlights:</p> <ul style="list-style-type: none"> ▪ A reduced journey time to Edinburgh in both the morning and evening periods of up to around 25 minutes from Moffat in the morning period; ▪ Minimal changes in the journey times to Glasgow, with a small decrease in the evening periods; and ▪ Large reductions in the journey time to Carlisle of up to around 30 - 40 minutes. <p>Consideration of the comparable journey times between Lockerbie and Edinburgh and Glasgow shows that in the existing situation, the travel time from Beattock and Moffat to the two major cities is between 30 – 60 minutes slower than from Lockerbie in both the morning and evening periods. This is despite both Moffat and Beattock being geographically closer to both Edinburgh and Glasgow. With the addition of the option, travel from Beattock and Moffat is only around 30 – 40 minutes slower than from Lockerbie.</p> <p>The reduced journey time between Beattock/Moffat, and Edinburgh and Glasgow, is likely to enable more time in these strategic locations to undertake activities, enabling more effective day trips, and therefore the option provides a positive benefit against this TPO.</p>	2
	2	Provide public transport connectivity which enables travel to and from the area across the day and across the week	<p>The option provides 7 new connections to Lockerbie from Moffat/Beattock on a weekday/Saturday with the service increasing operating hours across the day by over 7 hours with the service offering connections from 2 hours earlier in the morning and 5 hours later into the evening. This enables access back from Lockerbie much later in the day and connecting with late rail arrivals.</p>	2
	3	Increase the inbound public transport catchment to support local businesses through increased visitors to the area	<p>The analysis shows an increase in the number of people able to access Moffat and Beattock with the option in place, with a small increase of 4% in the number of people able to access the study area in under 2 hours. This would support the connectivity of the area for visitors.</p>	1

Option	TPO		Key Points	Score
3	1	Enable effective day trip by public transport to key education, retail and social opportunities in Glasgow, Edinburgh and Carlisle	<p>As the option provides increased opportunities to access Edinburgh, it would not necessarily provide reduced journey times, but may provide an increased ability to undertake a day trip by offering far greater flexibility in the timings of journeys.</p> <p>As expected, given there are no faster services provided for the option, the results do not show any difference between the existing situation and with the option in place.</p> <p>Given the much improved flexibility, the option therefore provides a positive benefit against this TPO.</p>	2
	2	Provide public transport connectivity which enables travel to and from the area across the day and across the week	The option only increases the operating day for trips to Edinburgh by 90 minutes on a weekday, but there are an additional 5 connections on a weekday/Saturday and 4 on a Sunday, providing far greater flexibility in time of travel.	2
	3	Increase the inbound public transport catchment to support local businesses through increased visitors to the area	The analysis shows an increase in the number of people able to access Moffat and Beattock with the option in place, with an increase of 13% in the number of people able to access Moffat, and an increase of 5% in the number of people able to access Beattock in under 1 hour. This would support the connectivity of the area for visitors.	1
6	1	Enable effective day trip by public transport to key education, retail and social opportunities in Glasgow, Edinburgh and Carlisle	<ul style="list-style-type: none"> • It is currently around 45 minutes quicker to access Edinburgh from Lockerbie compared to from Beattock. While there is no change in the morning period (due to the train stopping pattern not providing any improved accessibility between 08:00 and 12:00), in the evening it becomes around 25 minutes quicker from Beattock to Edinburgh than from Lockerbie. • It is currently 35 minutes quicker in the morning period, and around 45 minutes quicker in the evening period, to access Glasgow from Lockerbie compared to from Beattock. With the option in place it becomes 30 minutes <i>quicker</i> in the morning period and nearly 20 minutes <i>quicker</i> in the evening period from Beattock compared to from Lockerbie. • It is currently around 70-75 minutes quicker to access Carlisle from Lockerbie compared to from Beattock in the morning and evening. With the option in place, it becomes just 10 minutes slower from Beattock. This difference especially opens up opportunities for a more 	3

Option	TPO	Key Points	Score
		<p>effective day trip to Carlisle. No change is noted in the results for the morning period due to the stopping pattern not providing any improved connectivity between 08:00 and 12:00. However, a service at 07:28 from Beattock, would arrive into Edinburgh at just after 08:30 offering a much improved morning journey times of under 70 minutes (compared to the existing situation of over 2 hours).</p> <p>The option therefore provides a major positive benefit against this TPO, especially for enabling more effective day trips to the three cities through much improved and faster journey times.</p>	
2	Provide public transport connectivity which enables travel to and from the area across the day and across the week	<p>The option:</p> <ul style="list-style-type: none"> • Provides an additional 4 connections to Glasgow, 2 to Edinburgh and 6 to Lockerbie on a weekday /Saturday (note that the Sunday timetable was not developed for the appraisal). • Provides an extended operating day for connecting with Lockerbie, with an additional 4 hours 30 minutes of coverage, providing connectivity much later into the evening. Note that this also provides the same access back from Carlisle as all Lockerbie rail services also stop at Carlisle. • Does not extend the operating day for connections to Glasgow or Edinburgh but it is important to note that: <ul style="list-style-type: none"> ○ For travel to Glasgow, it would be possible to leave Beattock / Moffat at around 07:30 by rail and arrive into Glasgow at the same time as a bus which left Beattock / Moffat at 06:45. While the rail service is not providing access into Glasgow any earlier in the day, the start time of the journey is around 45 minutes later than the bus, reducing the need for the very early start from Beattock / Moffat. ○ It is also important to note that Option 6 provides direct connectivity to Carlisle where there is currently none, with the timetable offering the earliest connection to Carlisle at around 07:50 (arriving Carlisle at 08:30), and the latest connection back to Beattock from Carlisle at 22:16. Also note a connection at 17:15 back from Carlisle. The timetable would therefore be very effective for commuters. 	2
3	Increase the inbound public transport catchment to support local businesses through increased visitors to the area	<p>The analysis shows the very significant increase in the number of people able to access the study area, with over a 75% increase for those able to access Beattock in both under an hour and under two hours. There is additionally an increase of 15% in the number of people able to access Moffat in under 2 hours. The lower increase for Moffat compared to Beattock, reflects the fact that onwards connections are required from Beattock station to reach Moffat.</p>	3

Option	TPO	Key Points	Score
		The option has the potential to substantially increase the accessibility of the area to a much greater number of people, to support tourism and local businesses.	

6.6 STAG Criteria Appraisal

6.6.1 This section sets out the approach taken and key points in relation for appraisal of the options against the STAG criteria. The outcome of the appraisal can be found in Table 6.11.

Environment

6.6.2 The Part 2 environmental appraisal considers

- Noise and vibration;
- Global air quality – carbon dioxide (CO₂);
- Local air quality – particulates (PM₁₀) and nitrogen dioxide (NO₂);
- Water quality; drainage and flood defence;
- Geology;
- Biodiversity and habitats;
- Landscape;
- Visual amenity;
- Agriculture and soils; and
- Cultural heritage;

6.6.3 The methodology employed in assessing each sub-criteria and the completed option assessment tables are presented in Appendix P with a summary of the key findings provided in Table 6.3.

Table 6.3: STAG Environmental Appraisal Criteria – Summary

Option	Option Description	Key Findings	Score
1a/b	Bus operating between Beattock /Moffat and Lockerbie station	The options would be likely to encourage some minor modal shift from private car to bus and rail and as a result would see a reduction in vehicle greenhouse gas emissions, air pollution and noise, with a positive impact on health. As the options would utilise the existing road network it would not require acquisition of new land - as such there will no likely impact on biodiversity, geology and soils, the water environment, landscape and cultural heritage.	1
3	Increased direct services to Edinburgh		1
6	Re-open Beattock Railway Station	The option would involve the construction of the railway station at Beattock. As land acquisition is required, construction may have a potentially negative impact on local biodiversity, geology, soils, the water environment and cultural heritage - further assessment is required to understand these impacts fully. There may also be long-term noise impacts in the area	-1

Option	Option Description	Key Findings	Score
		close to the station due to train deceleration and acceleration. However, the option does not involve the running of additional trains (just an additional stop for existing trains) and therefore there would be little adverse impact on the environment in terms of additional greenhouse gas emissions. It was noted during the baselining stage of the study that private car ownership and use is high in the study area. Any modal shift to rail that could be achieved would reduce car use and associated noise, air pollution and greenhouse gas emissions.	

Safety

6.6.4 The STAG safety criteria includes two sub-criteria:

- Accidents; and
- Security.

6.6.5 The options being appraised are unlikely to generate significant modal shift from private car to public transport. Given this, it is not considered that the options will have a measurable impact on the number of transport related accidents and/or their severity. The appraisal against the safety criteria has therefore been largely qualitative and has focussed on the security sub-criteria.

6.6.6 The full option appraisal against the Safety criteria is shown in Appendix Q with a summary of the key findings provided in Table 6.4.

Table 6.4: STAG Safety Appraisal Criteria – Summary

Option	Option Description	Key Findings	Score
1a/b	Bus operating between Beattock and Lockerbie station	No material impact anticipated for accident rates or severity, due to the option. Security benefits for public transport users through reduced wait time in Lockerbie.	0
3	Increased direct services to Edinburgh	No material impact anticipated for accident rates or severity, or security due to the option.	0
6	Re-open Beattock Railway Station	No material impact anticipated for accident rates or severity due to the option. Security issues have been highlighted for foot and cycle access to the new station site dependent on its chosen location. If the station were to be located to the south of the village, access to the station by foot or cycle may be up to 1km from the furthest properties in Beattock with the final 300m	1

Option	Option Description	Key Findings	Score
		<p>approach to the station along a road not overlooked by residential properties and passing under a rail bridge. Given the distance and nature of the route, there is a security risk for those accessing the station by foot or cycle.</p> <p>The lighting in the station environment is likely to be of a better quality than existing lighting at bus stops in the area, leading to real and perceived security improvements for public transport users.</p> <p>Improved lighting and surveillance could be provided along the route to the site at the south of the village to improve security and increase the perceived feelings of safety.</p> <p>Note that if the station were to be located at the former station site (immediately adjacent to the village), the route to the station would be along roads overlooked by residential properties and is unlikely to feel unsafe.</p> <p>Security issues highlighted for foot and cycle access to a new station site could be mitigated through improved shared path provision.</p>	

Economy

6.6.7 At the Part 2 stage, the economy has focused on:

- Transport Economic Efficiency (TEE) - the benefits ordinarily captured by standard cost-benefit analysis, with a modelling exercise undertaken for Option 6, informed by the data collected during the platform surveys at Lockerbie station. A demand, revenue and benefits generation modelling exercise for the station re-opening was undertaken which is described in Appendix R.1.

Option 1a/b: Adjustment of Service 380 bus times to reduce interchange time at Lockerbie Railway Station, additional direct instances of the service, and extended service operating hours later into the evening; and

Option 3: Increased direct bus services to Edinburgh

6.6.8 A detailed exercise has not been undertaken for the bus options, Options 1a/b and 3, as the options are new instances of services. TEE benefits are typically primarily made up of travel time savings and changes in the cost of travel.

6.6.9 Users of the new bus services will be primarily either:

- People who previously drove to the station to go to the same destination
 - These people will likely have a longer journey times and potentially higher 'out of pocket' costs – the benefits to them will be more qualitative and convenience based
- People who previously walked / cycled to the station to go to the same destination

- The options here are aimed at longer distance connections where active travel is much less likely
- People who previously got a lift to the station to go to the same destination
- There may be cost savings here due to the ‘double-trip’ nature of these trips but travel time savings would be unlikely
- People who were not previously train users and have switched their destination
- People who were not previously travelling at all and are making new trips
 - For both these groups, it is not possible to evidence how these journey patterns may change and hence what the scale of benefits would be

6.6.10 For the rail options, we have established from the station surveys how existing rail passengers would have travelled in the absence of rail. So, by implication we can estimate how users of the new stations would have travelled previously and therefore determine the benefits to them of switching to rail. It was not possible to undertake a similar ‘counterfactual’ exercise for rail-link bus services as there are no equivalents.

Option 6: Re-open Beattock Railway station

Demand and Revenue Forecasting

6.6.11 A demand forecasting exercise was undertaken to estimate the passenger demand and revenue generated by a new railway station at Beattock. This exercise also considered the knock-on effects of a new station upon demand and revenue at the adjacent Lockerbie station. This allowed calculation of a net base year impact in terms of journeys and revenue – i.e. how many additional rail journeys would be generated overall and how much additional revenue would be raised if the station were to open today.

6.6.12 The approach taken to the calculation of these impacts is discussed in Appendix R.1, and split into the following elements:

- Outbound demand from Beattock Station;
- Inbound demand to Beattock Station;
- Transfer of existing rail passengers to Beattock Station;
- Journey time impacts on through passengers.

6.6.13 Table 6.5 sets out the Base Year demand and revenue results.

Table 6.5: Base Year Results

Market Segment	Journeys	Revenue
Outbound Demand	12,541	£141,578
Inbound Demand	5,206	£93,763
Beattock Station Usage⁶	17,747	£235,341

⁶ Includes trips transferred from Lockerbie.

Transfer from Lockerbie	-5,672	-£71,070
Impact of reduced calls at Lockerbie	-36,471	-£368,400
Overall Net Impact	-24,396	-£204,129

Benefit Cost Ratio Calculations

6.6.14 In order to calculate a Benefit Cost Ratio (BCR) for the potential station re-opening, the calculated anticipated demand and revenue impacts have been estimated over the 60-year appraisal period along with the costs and the overall financial impacts have been discounted to 2010.

6.6.15 The associated journey time benefits have been calculated and discounted to 2010, to then generate an overall BCR for the option.

6.6.16 To calculate the benefits, the following steps were undertaken:

- The demand figures calculated above comprised of:
 - **'Station Switchers'** – existing train users switching from other stations;
 - **New rail trips**, either:
 - Entirely new trips;
 - Those switching from car; or
 - Those switching from other public transport (bus).

The proportions were estimated on the basis of the platform surveys where people were asked how they would have made that journey in the absence of a train service

- For trips switching from other modes:
 - LENNON data was utilised to consider the distribution of these trips based on trip origins and destinations at Lockerbie station; and
 - Time savings from these trips was estimated to determine the benefits based on the assumptions on journey purpose.
- Overall demand was projected forward for 30 years using a 2.5% per annum growth rate (based on recent local trends in rail passenger growth), with no further growth for the following 30 years;
- The volume of through passengers was estimated from the LENNON data, with each affected passenger assigned a 2-minute travel time disbenefit (again based on an assumed purpose split);
- The figures were combined to provide an estimate of the overall net benefits assuming an opening year of 2023;
- The benefits were then discounted to a base year of 2010 to provide the Present Value of Benefits (PVB).

6.6.17 The station costs were estimated as set out in Appendix H and a number of differing cost assumptions were used to sensitivity test the impacts on the BCR:

- £15m – the higher end of the estimated range;
- £14m – the lower end of the estimated range;
- £10m and £5m – to account for a level of optimism bias already inherent in the cost figures as they are based on other station build **outturn** costs.

6.6.18 All Present Value Costs (PVC) calculations applied Optimism Bias at 44%.

6.6.19 The full resulting BCR figures are presented in Table R.5 in Appendix R . A station cost of £14m is estimated to achieve a BCR of 0.28 (if revenue is not included in the benefits). However, the implications of reducing calls at Lockerbie create an overall revenue reduction for the option and with revenue included in the BCR figure, the BCR is -0.45.

6.6.20 Given the negative revenue generated by the option, the re-opened station could never ‘break-even’ over the 60-year appraisal period.

6.6.21 It should be noted that the low BCR figure of less than 1 (with the assumed £14m station cost) is not untypical of rural stations where the case for the station is driven more by social need than monetary benefits. However, in this case, where reduced train calls and associated lost revenue at Lockerbie is assumed, the BCR is less than zero and thus careful consideration of the train stopping pattern would be required to minimise negative impacts at Lockerbie.

6.6.22 Note that the additional cost to operate a shuttle bus service from Moffat to the station to meet all arriving and departing trains was estimated at £123k annually, and has not been included in the above calculations.

Economy Appraisal Summary

6.6.23 The full option appraisal against the Economy criteria is provided in Table 6.6

Table 6.6: STAG Economy Appraisal Criteria – Summary

Option	Option Description	Key Findings	Score
1a/b	Bus operating between Beattock /Moffat and Lockerbie station	<p>As noted above, it is not meaningful to calculate a BCR figure for this option, however the operating costs are highly likely to outweigh the benefits, even if the potential revenue is considered (details of the estimated Cost to Government are provided in Section 6.7).</p> <p>A bus service offering a direct connection between Beattock and Lockerbie is unlikely to provide journey times quicker than by private car. As such, users accessing Lockerbie station at present are unlikely to switch modes based on journey time benefits alone. However, for those who are being ‘dropped off’ at the station, the option has the potential to save around 1 hour 40 minutes of drive time (Beattock to Lockerbie and back) for those ferrying the passenger to and from the station.</p>	-2
3	Increased direct bus services to Edinburgh	<p>As noted above, it is not meaningful to calculate a BCR figure for this option, however the service operating costs are highly likely to outweigh the benefits, even if the potential revenue is considered (details of the estimated Cost to Government are provided in Section 6.7).</p>	-1

Option	Option Description	Key Findings	Score
6	Re-open Beattock Railway Station	<p>Assuming a station cost of £14m, it is estimated to achieve a BCR of 0.28 (if revenue is not included in the benefits). However, the implications of reducing calls at Lockerbie create an overall revenue reduction on the service, and with revenue included in the BCR figure, the BCR is -0.45.</p> <p>Given the negative revenue generated by the option, the re-opened station could never 'break-even' over the 60-year appraisal period. It should be noted that the low BCR figure of less than 1 (with the assumed £14m station cost) is not untypical of rural stations where the case for the station is driven more by social need than monetary benefits.</p> <p>Note that these figures are derived from an assumed service pattern, where there is a reduction in level of service at Lockerbie, and the findings would be subject to change should an alternative, viable service pattern emerge. However, the station would still be unlikely to generate a positive Benefit Cost Ratio in the absence of a negative impact at Lockerbie.</p> <p>The additional cost to operate a shuttle bus service from the town centre to the station to meet all arriving and departing trains was also estimated at £123k annually.</p> <p>The implementation of a railway station at Beattock is likely to impact on the viability of operating bus services between Beattock and Lockerbie which may subsequently be reduced or removed affecting the smaller communities they serve (which are not situated such as to be able to benefit from the rail halt at Beattock) i.e. Wamphray, Johnstonebridge etc. It should be noted that given the more aged demographic of the area, many people hold a concessionary bus pass and are therefore entitled to free bus travel across Scotland. If new rail services were to be introduced which subsequently led to a reduction in bus services serving the area, this could have financial implications on those who are now required to pay for rail (for which only a part-fare discount is applied).</p>	-3

Integration

6.6.24 The STAG integration criteria focuses on three key integration elements:

- Transport integration;
- Transport and Land-use Integration; and
- Policy Integration

6.6.25 Detailed appraisal was undertaken at the Part 1 stage of the study, focussing on the transport integration elements of the integration criteria, and specifically focussing on the bus options.

6.6.26 At this stage of the appraisal, further appraisal building on the Part 1 work and further considering the options against all three elements of the integration criteria has been undertaken.

6.6.27 The full option appraisal against the Integration criteria is shown in Appendix S (including appraisal against the Policy Assessment Framework) with a summary of the key findings provided in Table 6.7.

Table 6.7: STAG Integration Appraisal Criteria – Summary

Option	Option Description	Key Findings	Score
1a/b	Bus operating between Beattock /Moffat and Lockerbie station	<p>The appraisal undertaken at Part 1 showed the option had the potential to substantially reduce average journey times for inbound and outbound trips to Edinburgh, Glasgow and Carlisle.</p> <p>The <i>Dumfries and Galloway 2014 Local Development Plan</i> does not set out any housing allocations for Beattock. However, the Plan sets out an allocation of 265 housing units in Moffat as well as some mixed use allocation. The proposed new bus service offering direct access to Lockerbie railway station and improving the connectivity of Lockerbie from Moffat, may make these dwellings more attractive to potential home-buyers, helping facilitate this housing development, in particular, it may improve the attractiveness of Moffat as a commuter town for working in Edinburgh.</p> <p>The assessment of the option against the STAG Policy Assessment Framework shows the option scoring well against all national objectives and sub-objectives.</p>	2
3	Increased direct services to Edinburgh	<p>In terms of transport integration, Option 3 would offer increased accessibility to Edinburgh, enabling increased connectivity both from and to the study area across the day.</p> <p>The option would not provide any improvements in terms of ticketing and would utilise existing buses and bus stop infrastructure.</p> <p>As noted above, <i>Dumfries and Galloway 2014 Local Development Plan</i> sets out an allocation of 265 housing units in Moffat as well as some mixed use allocation. The increased access may encourage the development of the identified site in Moffat.</p> <p>The assessment of the option against the STAG Policy Assessment Framework shows the option scoring well against all national objectives and sub-objectives.</p>	1
6	Re-open Beattock Railway Station	<p>As the option considers the reopening of a railway station in Beattock, it does not provide mode-to-mode integration benefits. However, the station's implementation would remove the need for transfer between bus and rail modes.</p> <p>As noted above, <i>Dumfries and Galloway 2014 Local Development Plan</i> sets out an allocation of 265 housing units in Moffat as well as some mixed use allocation. The proposed new railway station offering direct commutable access to Edinburgh, Glasgow and Carlisle is likely to make</p>	2

Option	Option Description	Key Findings	Score
		<p>these dwellings more attractive to potential home-buyers, helping facilitate this housing development.</p> <p>The assessment of the option against the STAG Policy Assessment Framework shows the option scoring well against all national objectives and sub-objectives.</p>	

Accessibility and Social Inclusion

6.6.28 The TPOs for the study are mainly focussed on connectivity and the accessibility of the area in terms of enabling effective day trips to strategic location by public transport, ensuring the public transport connectivity of the area across the day and across the week, and making the area more accessible for those coming into the area. Building on the analysis for the TPOs, as presented in Appendix O and summarised in Section 6.5, Appendix T explores the further benefits in terms of:

- Community Accessibility considering public transport network coverage and local accessibility and;
- Comparative Accessibility considering the distribution of impacts by people groups and geographical location.

6.6.29 As noted above, the full option appraisal against the Accessibility and Social Inclusion criteria is shown in Appendix S with a summary of the key findings provided in Table 6.8.

Table 6.8: STAG Accessibility and Social Inclusion Appraisal Criteria – Summary

Option	Option Description	Key Findings	Score
1a/b	Bus operating between Beattock / Moffat and Lockerbie station	<p>The option provides increased public transport coverage for the area additional bus links to Lockerbie. The option is particularly beneficially to those without a private car or unable to drive. This includes:</p> <ul style="list-style-type: none"> • Those on lower incomes and those less-abled for whom driving is not an option or for whom owning a car is not possible due to the costs involved, with the increased accessibility may open up new job opportunities further afield (such as in Carlisle) as well as enabling better access to social and recreational activities in Edinburgh; • The elderly who have stopped driving and those with greater healthcare needs, for whom the option would enable improved accessibility to the major healthcare facilities in Edinburgh; • Those seeking Higher and Further Education opportunities, through improved accessibility to Edinburgh and Carlisle which may be of particular benefit to those for whom living away from home is not affordable; 	2

Option	Option Description	Key Findings	Score
		<ul style="list-style-type: none"> Children under the age of 17, through increased ability to travel independently, with access to a greater range of extra-curriculum and social activities in which to participate, especially in Carlisle. <p>Beattock and Moffat are located in a rural location. The reduced access time to the WCML better connecting the community to trains would offer travel to further afield.</p> <p>The option would remove the issue of parking at Lockerbie station for the residents of the study area travelling there.</p> <p>A key benefit of improved accessibility to and from the study area will be in reducing the feelings of remoteness of the community and enabling local people to feel connected and part of a wider Scotland. This is especially important in terms of the long term sustainability of the community and the retention of younger people in the area. The option provides better equality of access to all enabling fair access to the wider opportunities.</p>	
3	Increased direct services to Edinburgh	<p>The option does not provide increased geographical coverage for the area but does provide increased bus service frequency to Edinburgh and coverage in terms of the times over which services are operational.</p> <p>The option is particularly beneficially to those without a private car or unable to drive. This includes:</p> <ul style="list-style-type: none"> Those on lower incomes and those less-abled for whom driving is not an option or for whom owning a car is not possible due to the costs involved, with the increased accessibility to Edinburgh would enable better access to social and recreational activities in the capital; School children, for whom the option would provide an increased ability to travel independently, providing access to greater range of extra-curriculum and social activities in which to participate in Edinburgh; and Local businesses, especially those connected to the tourism industry, by enabling people to visit the area more easily, attending local events. <p>Beattock and Moffat are located in a very rural location. The improved access to Edinburgh would enable the community to participate in a greater range of activities. This may help combat feelings of community isolation.</p>	2
6	Re-open Beattock Railway Station	<p>The option provides increased public transport coverage for the area with new direct access to the rail network. This enables improved connectivity and reduced access time to locations Glasgow, Edinburgh and Carlisle and destinations further afield on the rail network.</p>	3

Option	Option Description	Key Findings	Score
		<p>The option is particularly beneficially to those without a private car or unable to drive. This includes:</p> <ul style="list-style-type: none"> • Those on lower incomes for whom owning a car is not possible due to the costs and the less abled by opening up new job opportunities. This may be particularly true for opportunities in Carlisle, for which the travel time with the option reduces to just 35 minutes, which could be considered a very satisfactory daily commute time. The timetable developed would also provide good commuting times. It should be noted that the train journey time would in fact be quicker than the private car to Edinburgh, Glasgow and Carlisle; • Local businesses, especially those connected to the tourism industry, by enabling people to more easily visit the area. The existence of a railway station raises the profile of an area and visitors may be more likely to consider day trips from Glasgow and Edinburgh to visit the local area. This has the potential to significantly benefit the local economy and community through increased spend in the town and likely increased local job opportunities; • The elderly who have stopped driving, and those with greater health needs, for whom the improved access may enable improved accessibility to the major hospitals in Edinburgh and Glasgow; • Those seeking higher education opportunities; • Children under the age of 17 through providing access to a greater range of extra-curriculum and social activities in which to participate in both Edinburgh and Glasgow. <p>It should be noted that the station is located 4.5km away from Moffat, which presents an accessibility issue for those less abled and the elderly.</p> <p>Beattock and Moffat are located in a very rural location. The improved access to Edinburgh, Glasgow and Carlisle would enable the community to participate in a greater range of activities. This could result in benefits in terms of public health and reduced social inclusion.</p> <p>As with Option 1a/b, a key benefit of improved accessibility to and from the study area will be in reducing the feelings of remoteness of the community and enabling local people to feel connected and part of a wider Scotland. This is especially important in terms of the long term sustainability of the community and the retention of younger people in the area. The option provides better equality of access to all enabling fair access to the wider opportunities.</p>	

6.7 Cost to Government

Option 1a/b: Adjustment of Service 380 bus times to reduce interchange time at Lockerbie Railway Station, additional direct instances of the service, and extended service operating hours later into the evening

- 6.7.1 The commercial viability of Option 1a/b, has been revisited in light of the changes made to the option which is now a combined Option 1a and Option 1b option.
- 6.7.2 At Part 1, the cost of Option 1a was estimated at £345k and Option 1b as £50k (over and above the existing cost for Service 380 provision). The combined cost of Option 1a and Option 1b (where there are some 'express' instances of the 380) has been estimated as £179k, over and above the existing Service 380 provision.
- 6.7.3 The average single fare assumed at Part 1 appraisal, of £2.14, has been retained.
- 6.7.4 Dividing the annual costs of £179k by the average fare of £2.14 means that the service would require approximately 83,600 additional single trips annually to break even.
- 6.7.5 83,600 additional single trips annually equate to 229 *additional* passengers on the service a day.
- 6.7.6 The Office of Rail and Road (ORR) estimates of station usage for 2014-2015 shows total annual passengers station entries and exits of approximately:
- 215,000 at Lockerbie Railway Station.
- 6.7.7 The National Rail Travel Survey (NRTS, 2007)⁷ shows that 10% of users accessing a railway station have arrived by bus/coach. Rural areas and small towns will typically have a lower share of bus-based access to railway stations than this due to the nature of the rural bus network. For example, bespoke surveys of passengers at rural stations previously undertaken by the project team have shown a bus access mode share of 5% or less.
- 6.7.8 Assuming that 5% of passengers to Lockerbie Railway Stations arrive by bus equates to a total of 10,750 passengers annually arriving or departing by bus. The required number of *additional* passengers for the Beattock service to break even is far in excess of this (83,600) and therefore the service is highly unlikely to be commercially viable.
- 6.7.9 A high level assessment was undertaken to estimate the level of subsidy required to support the service. The following was undertaken:
- Lockerbie platform surveys were used to establish the number of rail passengers alighting at Lockerbie who came from Beattock or the surrounding area (the DG10 postcode);
 - Passenger figures were uplifted to a total day count using ORR LENNON entries and exits data;
 - From the Lockerbie platform surveys, the percentage of users arriving at the station by bus was established (4%);
 - The percentage arriving by bus was then applied to the estimated number of daily passengers arriving from Beattock / Moffat to estimate the total number of rail users assumed to arrive at Lockerbie by bus from Beattock / Moffat;

⁷ <http://www.transport.gov.scot/system/files/documents/reports/NRTSProvisional2007.pdf> - Table 6

- Using the average single fare calculated of £2.14, and the estimated passengers using the service, an overall annual revenue figure was calculated;
- Increasing levels of modal shift were assumed to establish how the revenue figure would change if a greater number of passengers utilised the service.

6.7.10 The results showed the high subsidy that would be required, around £200 - £230k annually, to operate the service. This equates to around 6-7% of SWestrans total bus subsidy.

6.7.11 If the service were to be implemented, it would require reducing services elsewhere in order to meet SWestrans budgetary constraint for the procurement of subsidised services. In terms of bus services which require subsidy, the Transport Act 1985, which governs the operation of local bus services sets out how a local transport authority can procure a bus service that is not being provided by the market. It also includes cases where new services need to be pump primed, i.e. where short term start-up funding is required until passenger demand reaches a level where the service becomes viable. If SWestrans wished to secure services, there would be an element of risk to both the service operator and the SWestrans surrounding the uptake for the service and the patronage that may be achieved. It would be more likely that a gross cost contract be appropriate in order to encourage operator bids. The major risk would then be borne by SWestrans.

Option 3: Increased direct buses to Edinburgh – increase in frequency of Service 101 with a service every 2 hours during the day and evenings Monday – Sunday

6.7.12 There have been no changes to the anticipated services to be provided as part of this option. As such, the work undertaken at STAG Part 1 remains valid in terms of the estimated operational costs and revenue.

6.7.13 The enhancement of Service 101 to give a two hourly frequency on Monday to Saturday and Sunday, including an evening service would require one additional bus in the service schedule and would add 17 operating hours per day, Monday to Saturday and 35 hours on Sunday.

6.7.14 The total annual operating cost were estimated at £225k furring Part 1 Appraisal with a total revenue estimated at £15k. Therefore, Option 3 would require £42k in subsidy to 'break-even'. This equates to around 1% of SWestrans total bus subsidy.

6.7.15 In terms of bus services which require subsidy, the Transport Act 1985, which governs the operation of local bus services sets out how a local transport authority can procure a bus service that is not being provided by the market. It also includes cases where new services need to be pump primed, i.e. where short term start-up funding is required until passenger demand reaches a level where the service becomes viable. If SWestrans wished to secure services, there would be an element of risk to both the service operator and SWestrans surrounding the uptake for the service and the patronage that may be achieved. It would be more likely that a gross cost contract be appropriate in order to encourage operator bids. The major risk would then be borne by SWestrans.

Option 6: Re-open Beattock Railway station

6.7.16 For Option 6, over the 60-year appraisal period, Table 6.9 below shows:

- Assumed station cost, based on a range of values (in today's prices) as set out in Appendix R.1);
- Present Value of Benefits (PVB): discounted to 2010 values;
- Present Value of Cost (PVC): the station costs with optimism bias, discounted to 2010 values; and

- Net Present Value (NPV): PVB-PVC.

Table 6.9: Option 6 – Cost to Government (PVC and PVB discounted to 2010)

Assumed Station Cost (£m)	PVB (£m)	PVC (£m)	NPV (£m)
£15.0	-£6.6	£14.5	-£21.1
£14.0	-£6.6	£13.6	-£20.2
£10.0	-£6.6	£9.7	-£16.3
£5.0	-£6.6	£4.8	-£11.4

- 6.7.17 It should also be noted that a shuttle bus operating between Moffat and Beattock train station has been estimated to cost around £123k annually to operate. This cost would be borne by SWestrans.

6.8 Risk and Uncertainty

- 6.8.1 The overall risk and uncertainty inherent in the implementation of the options has been considered and is summarised in Table 6.10.

Table 6.10: Risk and Uncertainty

Risk	Risk Type	Comments	Potential Mitigation
Delivery Risk	Infrastructure Risk	<p>Options 1a/b and 3 propose additional bus services. These services would operate on existing roads and use existing bus stops. Therefore, there is no infrastructure risk associated with them.</p> <p>Option 6 requires the build of a new station. The site visits undertaken during Part 2 Appraisal highlighted two potential sites for the station, one in the vicinity of the old station site, and another to the south of the village.</p> <p>Note that for both sites, access, car parking and overbridge requirements would need to be considered in detail to establish their feasibility (as well as potentially upgrading active travel access from the centre of the village to the south site) and further detailed design work is required to investigate which site is the most suitable.</p> <p>As the station is located 4.5km to the west of Moffat, suitable active travel infrastructure is required to ensure a safer route to the station from Moffat</p>	<p>Ensure detailed design work considers fully the implementation issues at an early stage to ensure the feasibility of the station. This would include ensuring adequate parking was available.</p>

Risk	Risk Type	Comments	Potential Mitigation
		<p>which is appropriately surfaced and lit. This should be considered at the design stage.</p>	
	<p>Planning Risk</p>	<p>In terms of Option 6, there is a risk that detailed planning permission may not be able to be obtained due to the land required for implementation of the station, although it is noted that Beattock Station Action Group own some of the land at Hermitage Park which could be utilised to provide station parking if the old station site were deemed the most appropriate station location.</p>	<p>Ensure early consideration and discussion with land owners to obtain agreement on the infrastructure to be provided and the land requirements.</p>
	<p>Construction Risk</p>	<p>For Option 6, the implementation of the station represents a not insignificant infrastructure project and there is a risk around the budget required for this increasing particularly given that construction is unlikely to start until some years from now if this were taken forward. To make some allowance for this, Optimism Bias of 44% has been applied to the station build capital costs to account for the degree of uncertainty at this stage. However, it should be noted that the capital station costs have been drawn from <i>outturn</i> costs of recently build stations and as such the level of optimism biased applied is very robust and could potentially be reduced or even removed.</p>	<p>On-going revisiting of the costs of the infrastructure as design work progresses to ensure the cost estimates are as robust as possible. In addition, the costs should have optimism bias applied reflective of the stage in the design process.</p>
<p>Operational Risk</p>	<p>Operational Risk</p>	<p>In terms of Options 1a and 3, the main operational risk in taking options forward pertains to the likelihood of bus operators to be encouraged to operate the additional services.</p> <p>The work undertaken to establish the commercial viability of the services has highlighted that neither option would be commercially viable. Operators are unlikely to operate services which are not deemed commercial and as such both options would require a level of subsidy to operate.</p> <p>While estimates of potential service demand have been made, it is not yet known what the overall patronage of</p>	<p>For Option 1a and 3, ongoing discussion with bus operators as to their willingness to operate service and the levels of patronage on the routes.</p> <p>For Option 6, ongoing discussion with all rail industry parties throughout the GRIP process.</p>

Risk	Risk Type	Comments	Potential Mitigation
		<p>the services may end up being. As such there would be a short to medium term financial burden and risk on SWestrans in offering a level of subsidy during the procurement process – which may be in excess of that required.</p> <p>There is additionally the ongoing risk that, once operational, at a future date operators will withdraw their support for a service, and / or public funding becomes more constrained and the required subsidy to operate the service can no longer be provided.</p> <p>In terms of Option 6, rail services are already operational on the line through Beattock, however the appraisal process and the creation of a timetable has highlighted the issues of adding in a stop at Beattock, and as such a notional timetable has been developed assuming alternating stops at Beattock and Lockerbie.</p> <p>This however assumes the feasibility of adding the Beattock into existing timetables and securing agreement on this from Transport Scotland / Network Rail etc. and from the current operators who expressed they would be unlikely to want to include Beattock.</p> <p>On-going discussions with Transport Scotland / Network Rail / TransPennine Express / Virgin Trains etc. is required to buy-in and awareness by all parties throughout of process.</p>	
	<p>Demand Risk</p>	<p>For Options 1a and 3, the greatest uncertainty surrounding the operation of the options and their viability relates to the demand for the services and the level of subsidy required. There is a risk that the demand for the services will be lower than estimated.</p> <p>Patronage on the services which proves to be lower than estimated would create a risk to SWestrans if subsidy were being provided and a risk to the operator through reduced revenue. It may be that a service, if</p>	<p>For Options 1a and 3, revising the estimates of demand using a more detailed bus patronage model.</p> <p>For Option 6, detailed demand modelling work during the GRIP process.</p>

Risk	Risk Type	Comments	Potential Mitigation
		<p>implemented, may be subsequently removed, impacting on the areas accessibility and sustainability.</p> <p>For Option 6, the level of demand anticipated would need to be considered in detail during the GRIP process, to ensure robust estimates to allow for an appropriate understanding during any franchise tendering process.</p>	
	Financial Risk	For Option 1a and 3, there is a risk around the estimated operational costs for the services increasing particularly given that option implementation is unlikely to start until some years from now if this were taken forward.	On-going revisiting of the operational costs for the services to ensure the estimates are as robust as possible.

Part 2 Engagement

- 6.8.2 A Public Event was held on 24th January 2019 in Moffat from 16:00 – 20:00 at Moffat Town Hall. The purpose of the event was to present information about the study, covering all stages of the study including the problems identified, the options generated and the option appraisal process and key appraisal findings. The events were publicised via social media by the Council and also communicated to local people through Beattock Station Action Group.
- 6.8.3 A feedback form was available for completion at the event asking participants about the severity of the problems identified, the impacts of the problems on them and their community, and their thoughts on the options and how they would benefit them. Pre-paid envelopes were also made available if people wished to complete the feedback form at home and post back. Furthermore, the feedback survey (identical to that handed out at the event) was made available online for completion.
- 6.8.4 The Public Event material was also made available online after the event, with the link to the online version of the feedback survey alongside it. The Council further publicised that the material was available.
- 6.8.5 In total 380 people attended the event on the night, with a total of 528 feedback surveys completed (combined paper, posted and online surveys completed).
- 6.8.6 Full analysis of the feedback survey is presented in L.2.
- 6.8.7 In terms of public acceptability of the options:
- 91% (n=469) of respondents felt that Option 6 would have a major positive impact for travelling to and from the Beattock area;
 - 30% (n=155) thought that Option 3 would have a major positive impact on the area; and
 - 29% (n=150) felt that Option 1a/b would have a major positive impact on the area.

6.8.8 Respondents were asked to state which was their preferred option for the future (as shown in Figure 6.1):

- 95% (n=488) stated that their preferred option was Option 6, to re-open Beattock railway station;
- 3% (n=16) selected Option 3; and
- 2% (n=12) selected Option 1a/b.

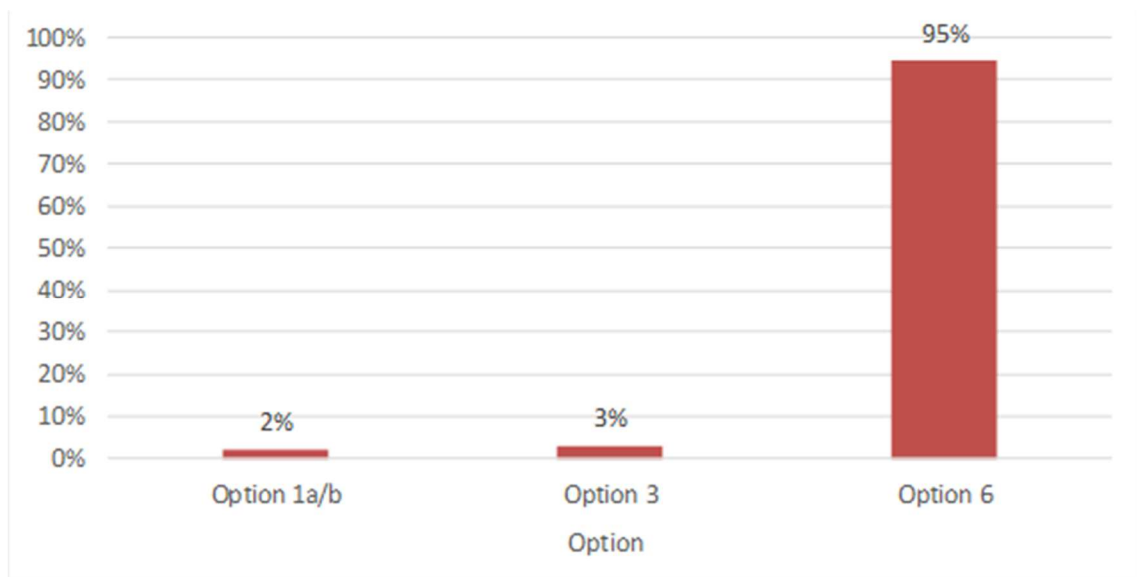


Figure 6.1 Preferred Option

6.8.9 Before the public event on the 24th January 2019, meetings were held with:

- Pupils from Moffat Academy;
- Beattock Station Action Group; and
- Visit Moffat.

6.8.10 Details of the discussions are provided in Appendix L .

6.9 Overall Option Scoring

6.9.1 A concise overview of the Part 2 Appraisal scoring is shown in Table 6.11.

Table 6.11: Appraisal Overview against the TPO's and STAG Criteria

Option	Description	Transport Planning Objectives			STAG Criteria				
		TPO1	TPO2	TPO3	Environment	Safety	Economy	Integration	Accessibility & Social Inclusion
		Enable an effective day trip by public transport to key education, retail and social opportunities in Glasgow, Edinburgh and Carlisle	Provide public transport connectivity which enables travel to and from the area across the day and across the week	Increase the inbound public transport catchment to support local businesses through increased visitors to the area					
1a/b	Adjustment of Service 380 bus times to reduce interchange time at Lockerbie Station, additional direct instances of the service, and extended service operating hours later into the evening	2	2	1	1	0	-2	2	2
3	Increased direct bus services to Edinburgh	2	2	1	1	0	-1	1	2
6	Re-open Beattock Railway Station	3	2	3	1	-1	-3	2	3

7 Conclusions

7.1 Introduction

- 7.1.1 This study has identified and evidenced the transport problems and opportunities for Moffat and Beattock, developed a set of Transport Planning Objectives to express the outcomes sought for the study, and generated and appraised a number of transport options to provide solution(s) to meet the objectives and alleviate the problems.

7.2 Problems and Opportunities Summary

- 7.2.1 Moffat and Beattock are rural communities, which while connected reasonably well by public transport to Glasgow, Dumfries and Lockerbie, suffers from a lack of strategic public transport connectivity further afield (Edinburgh, Carlisle and beyond) in terms of a lack of direct routes, long journey times and poor service frequency. Although connectivity to Glasgow is good, the journey time by public transport is long compared to equivalent travel times by car. This is especially pertinent to those without access to a car (those who cannot afford or prefer not to buy or run a vehicle) and those unable to drive (the young, the elderly and those less able), especially as the location of Moffat and Beattock means both are within what could be considered an acceptable commute time to the two major Scottish cities as well as Carlisle. In addition, the lack of strategic public transport accessibility results in a high reliance on the private car in the study area by those who do have access to a car but would prefer to use public transport.

- 7.2.2 This lack of strategic connectivity is felt across the community and particularly in terms of:

- Limiting visitors to the area, and thereby impacting on local tourist related businesses and reducing the areas ability to realise the full potential of the area's tourist offering. This is a key concern as Moffat is very much a 'tourist' town;
- Constrained access to higher and further education, particularly in terms of the need for young people to leave the area to further their education after secondary school;
- Constrained access to social activities for all, but again particularly for young people who must rely on others for transport to / from the area which is reducing their opportunities to gain independence;
- Making it difficult to access healthcare, particularly at the major health centres in Edinburgh and Glasgow; and
- Making the area a less attractive proposition for in-migration, to support the long term sustainability of the community.

- 7.2.3 For the strategic and also local buses that do serve the area, the limited operating hours of bus services to Lockerbie curtail the ability of the local community to return back to the study area from trains after 18:00 and access the rail network before midday on a Sunday, limiting employment opportunities requiring shift or weekend working and the ability of the community to participate in social opportunities further afield. In addition, the hours of operation limit the ability of those in the study area to access social, retail and education services and facilities in Lockerbie itself.

- 7.2.4 While access to the rail network can be gained at Lockerbie to join the West Coast Main Line, poor integration between the bus and rail networks (in terms of the integration of timetables), means the rail network is not easily accessible. Long interchange times create extended journey times, with analysis presented in this report highlighting the poor connectivity to and from Moffat and Beattock.

- 7.2.5 It is important to note that Carlisle is a key economic, retail and social centre, being closer to Beattock and Moffat than Glasgow. Public transport access to Carlisle requires interchange in Lockerbie, either to an onwards bus connection or to rail. In this regard, residents of Beattock and Moffat are at a significant disadvantage compared to those in Lockerbie who have direct access to the rail network. When considering journey times to Glasgow and Edinburgh, it is important to note that journey times from Lockerbie are far quicker even though the town is geographically further away from both cities than Moffat and Beattock.
- 7.2.6 An important issue when considering public transport across not just study area, but also more widely across the region, is the fragile nature of existing bus operations, with many local services reliant on subsidy. Budget cuts mean the level of available subsidy has been reducing year on year over the last 5 years. This is undermining people's faith in the bus network and future dependence on services.
- 7.2.7 It is clear that a key benefit of improved connectivity to and from the study area will be in reducing the feelings of remoteness of the community and enabling local people to feel connected to, and part of a wider Scotland. This is especially important in terms of the long term sustainability of the community, and the retention of the economically active population and younger people in the area, while ensuring equality of access for all to the wider opportunities. It is worth noting that Moffat Academy has a reducing student roll, highlighting the reducing numbers of people, and especially younger people, in the area, and the potential future difficulties arising for long term community sustainability.
- 7.2.8 The town of Moffat has a strong tourist offering with many local businesses in the industry. It is strongly felt that improved connectivity to and from the study area has the potential to boost tourism to the area, supporting and sustaining local businesses and the local economy. Improved strategic access was felt to be key to increasing visitor numbers, especially through enabling ease of access for international visitors, with improved connectivity allowing for effective tourist day trips to the area from the major cities.
- 7.2.9 As such, the Transport Planning Objectives for the study were set to reflect the above. These are:
- **TPO 1:** Enable an effective day trip by public transport to key education, retail and social opportunities in Glasgow, Edinburgh and Carlisle
 - **TPO 2:** Provide public transport connectivity which enables travel to and from the area across the day and across the week
 - **TPO 3:** Increase the inbound public transport catchment to support local businesses through increased visitors to the area

7.3 Options and Appraisal Findings

- 7.3.1 Seven options were initially developed with three options taken forward to the end of the appraisal:
- **Option 1a/b:** Adjustment of Service 380 bus times to reduce interchange time at Lockerbie Railway Station with additional direct instances of the service, and extended service operating hours later into the evening
 - **Option 3:** Increase direct buses to Edinburgh
 - **Option 6:** Re-open Beattock Railway Station
- 7.3.2 The appraisal of the options has highlighted some key points. It is not the purpose of this report to recommend one option over another, but to present the key appraisal findings for all options.

- 7.3.3 It is clear that there is limited subsidy available to subsidise further bus services in the area, and additional services, such as those proposed in Options 1a/b and 3 may have to come at the expense of subsidised services elsewhere.
- 7.3.4 Option 1a/b has the potential to enable improved access to Edinburgh and Carlisle reducing the journey time differential between public transport and the private car, and offering additional connectivity to and from the area from earlier and later running trains at Lockerbie. The improved connectivity to the West Coast Main Line offers increased opportunities for the community to access locations further afield as well as providing ease of access into the area, promoting local tourism, supporting local businesses and also enabling a wider catchment area for local employers. The option would also help alleviate the current pressure on parking at Lockerbie station.
- 7.3.5 It should be noted that the option is unlikely to be heavily utilised and unless substantially more demand for the service could be generated, would require significant support from the public purse to operate. Given the likely low passenger numbers, a much reduced 'on-demand' taxi-bus type offering is likely to be more proportionate than a schedule service bus.
- 7.3.6 The key benefits of Option 3 are focussed on reducing the time constraints on access to and from Edinburgh, enabling better access across the day and at weekends. This has specific advantages in terms offering flexibility of access both into and out of Moffat and Beattock, but does not reduce the access time to Edinburgh, which remains long and substantially longer than the car.
- 7.3.7 It is clear that there is strong local support for the reopening of a railway station in Beattock, with public engagement over the course of the study strongly emphasising the desire of the local community for this.
- 7.3.8 The case for Option 6, the reopening of the station in Beattock, is highly unlikely to 'stack up' from an economic perspective and is unlikely to produce a BCR of greater than one. Engagement with the current train operators on the line highlighted a lack of desire to alter existing service patterns given current rail markets served and capacity issues on the line. As such, it is important to note that the notional timetable developed for this option assumed alternating stops between Lockerbie and Beattock and as such there was a service reduction at Lockerbie, generating negative overall revenue figures. In the longer term, a ScotRail-based service may provide an alternative solution.
- 7.3.9 The case for a new station at Beattock, like in many other rural locations, will be heavily focussed on the connectivity and accessibility benefits such an intervention could bring. The case for such an intervention must therefore be considered in terms of the wider social benefits to the local community and ensuring the community has equality of access. There was strong public support for the opening of the station over other options.
- 7.3.10 The analysis undertaken has highlighted the much improved strategic connectivity of the area that could be achieved if the station were reopened including the key benefit of accessing Glasgow, Edinburgh and Carlisle, which would now all be within acceptable commuter time, with access times faster than by car. The improved access would offer greater retail and social opportunities for younger people. Journey times to key strategic centres would also be more closely aligned to those available from Lockerbie, allowing for equality of access from Moffat and Beattock. A key benefit would also be the increased accessibility of the study area to the wider area, allowing visitors ease of access and supporting the local tourism industry.
- 7.3.11 It is noted that the railway station in Beattock would be located approximately 4.5km from Moffat and in order to enable ease of access, the station would require a connecting bus or 'taxi-bus' type link. In addition, an improved shared-use walking and cycle path to the station would be required with appropriate lighting.
- 7.3.12 Cognisance must also be taken of the potential impact on existing bus services in the area if the railway station were to reopen. As a result of the station reopening there may be a reduction

in services operating between the study area and Lockerbie (Service 380), Edinburgh (Service 101) and Glasgow (Service X74). Smaller communities served by these buses may experience a reduction in bus service if the railway station were reinstated and this impacted significantly on bus patronage and hence overall bus operation viability. This would be detrimental to the connectivity of these communities.

- 7.3.13 It is also important to note the financial penalty of undertaking trips by rail for those who are entitled to concessionary bus passes and the financial burden reduced bus operations may place on those even within Beattock and Moffat (for whom the station is easily accessible but not easily *financially* accessible).
- 7.3.14 The *Dumfries and Galloway 2014 Local Development Plan* sets out an allocation of 265 housing units in Moffat as well as some mixed use allocation. A new railway station offering direct commutable access to Edinburgh, Glasgow and Carlisle is likely to make these dwellings more attractive to potential home-buyers, helping facilitate this housing development and further supporting the longer term sustainability of the community
- 7.3.15 A further longer term potential opportunity for rail access was identified in the form of calls by a new Stirling – Carlisle service (as per Scotland Route Study *Opportunity to Travel by 2043*). Given the timescales until such a service may have potential, this longer term option was not considered at Part 2 Appraisal but could however be revisited at an appropriate future date.

7.4 Summary

Overall, all options offer a number of key benefits, with Options 1a/b and 6 offering greater strategic connectivity potential than Option 3, but with an attached heavier financial requirement. While Option 1a/b provides improved connectivity to Edinburgh and Carlisle, Option 6 significantly improves direct public transport connectivity to Glasgow, Edinburgh and Carlisle enabling much quicker and improved access to jobs, social opportunities and healthcare in these major employment, social and retail centres.

Appendix A Initial Engagement and Consultation

A.1 Initial Public Consultation

A.1.1 An online public survey was produced and made available over the period 26th February 2016 – 27th May 2016. The survey asked questions on:

- Modal use;
- Most frequented destinations and the purpose of trips to these destinations;
- Existing problems when using various travel modes; and
- Suggested improvements to the transport network.

A.1.2 For those unable to complete the survey online, a telephone number was made available through which paper copies could be requested.

The survey was publicised via a variety of means as follows:

- Leaflets were delivered to 2002 households within the DG12 6 postcode area. The extent of this area is shown in Figure A.1, with the leaflet shown in Figure A.2.
- Information on the survey was provided to each of the Community Councils in the study area (Kirkpatrick Juxta and Moffat and District) distribution via their internal communication network;
- A Press Release on the survey was issued; and
- Information and links to the surveys were included on the SWestrans website.

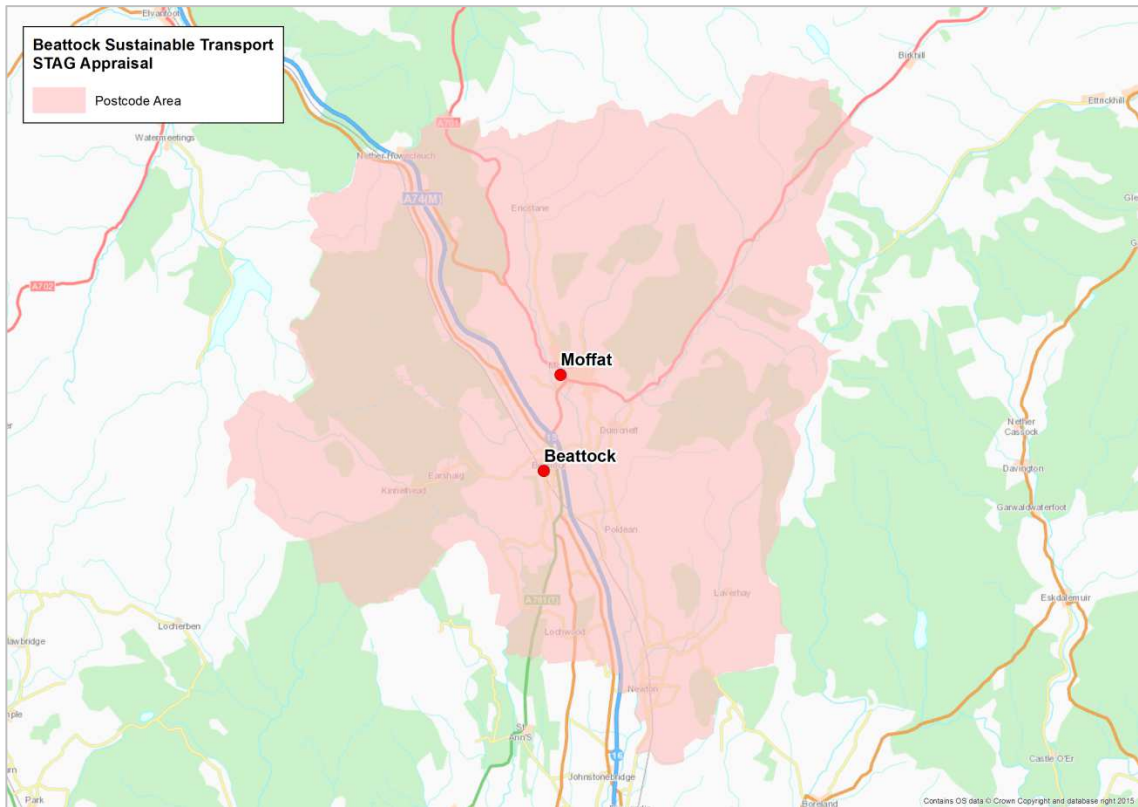


Figure A.1: Postcode Area to which Leaflets were distributed

HELP US IMPROVE TRANSPORT CONNECTIONS FOR BEATTOCK, MOFFAT AND THE SURROUNDING AREA

Beattock Station Action Group in partnership with SWestrans (the Transport Partnership for Dumfries and Galloway) have commissioned Peter Brett Associates to undertake a Sustainable Transport Options Study for Beattock, Moffat and the surrounding communities.

The first stage of this Study involves identifying and understanding the transport issues which affect the Beattock, Moffat area and the surrounding communities.

To help us with this, we would like you to tell us about the transport problems you face. We would also like to hear your thoughts on how the transport network could be improved. Your views may include issues on access to employment, healthcare and leisure facilities or how transport could encourage investment in the Beattock and Moffat area.

You can provide your views by completing the short survey which is on the Transport Surveys page of the SWestrans website:

www.swestrans.org.uk

Alternatively, you can complete the survey directly at:

www.surveymonkey.co.uk/r/beattocktransportsurvey

If you would like to complete the survey but cannot do so online a paper copy can be sent to you by phoning SWestrans:

01387 260372

THE SURVEY WILL BE OPEN UNTIL FRIDAY 27TH MAY 2016




Figure A.2: Leaflet distributed

- A.1.3 In total, **340** responses were received from the survey, with the majority of respondents (72%) living within the Beattock and Moffat area. A further 10% live in the surrounding area (within 10 miles of Beattock/Moffat), A further 8% resided in the wider Dumfries and Galloway area, with the remaining 10% living outwith the region.

- A.1.4 More responses were received from males (54%) (n=325) than females (42%), with a small number of people preferring not to respond to the question.
- A.1.5 The survey was completed by a wide range of age groups, with the highest level of responses being generated by the 45 – 54 year old group. Figure A.3 shows the breakdown of responses by gender and age groups.

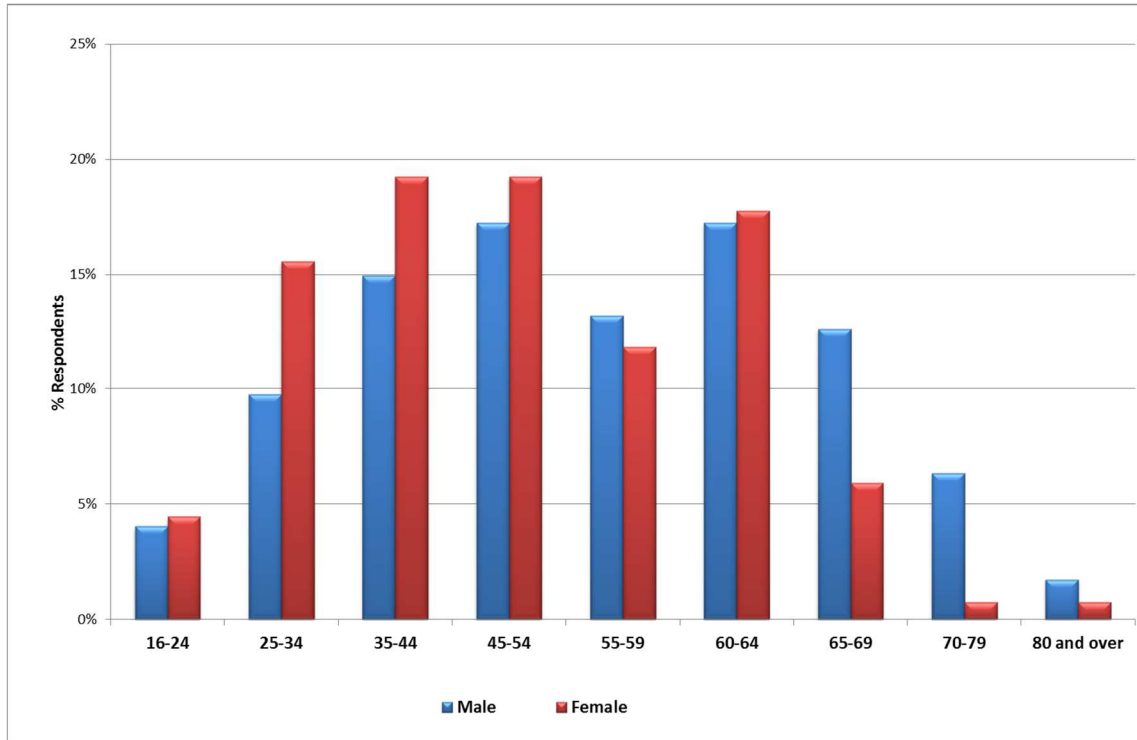


Figure A.3: Age / Gender breakdown

- A.1.6 Car is the most dominant mode for those who travel in the study area, with 77% of respondents (n=340) indicating they either drive or travel as a passenger in a car as their main mode of travel on a daily basis. 13% travel by bus with a further 3% utilising rail. Active modes account for 7% of responses. Figure A.4 illustrates main mode of travel across the study area.

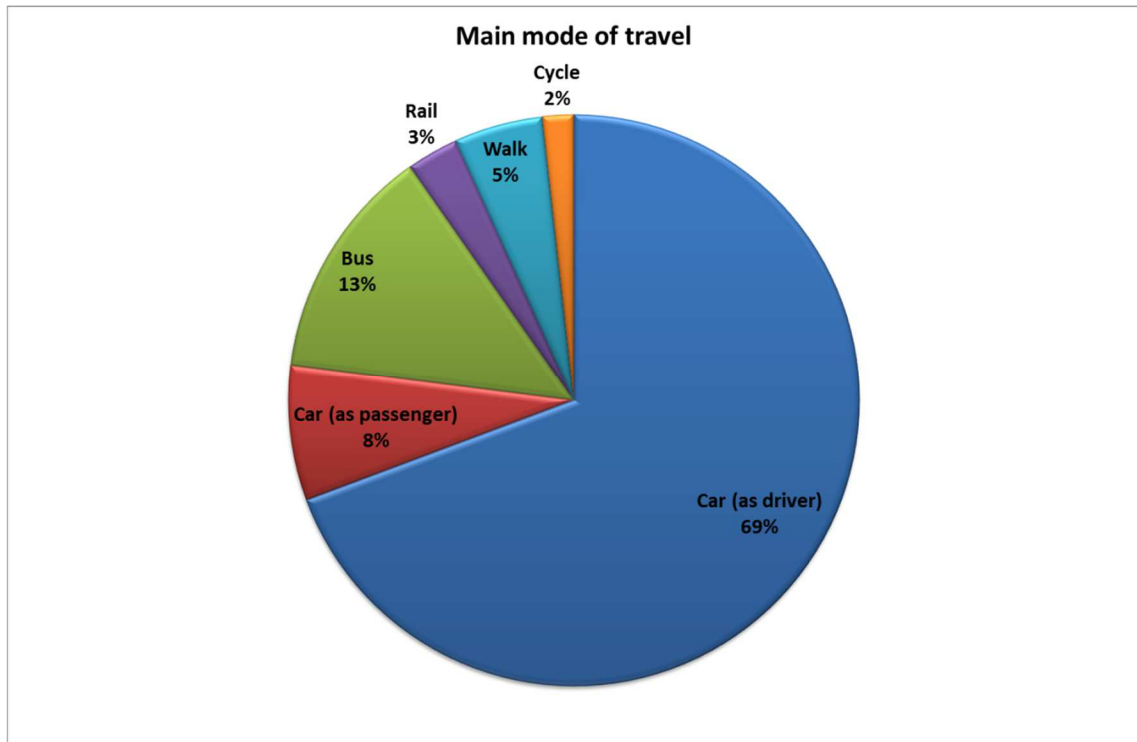


Figure A.4: Main mode of travel

A.1.7 Respondents were asked which locations they regularly travel to and the journey purpose for each location. Results are shown in Figure A.5. In addition to the home location of Beattock/Moffat, the major cities of Glasgow and Edinburgh were popular locations, this was mostly driven by leisure and entertainment opportunities in each city. There is also significant travel to Dumfries, again driven by retail and leisure.

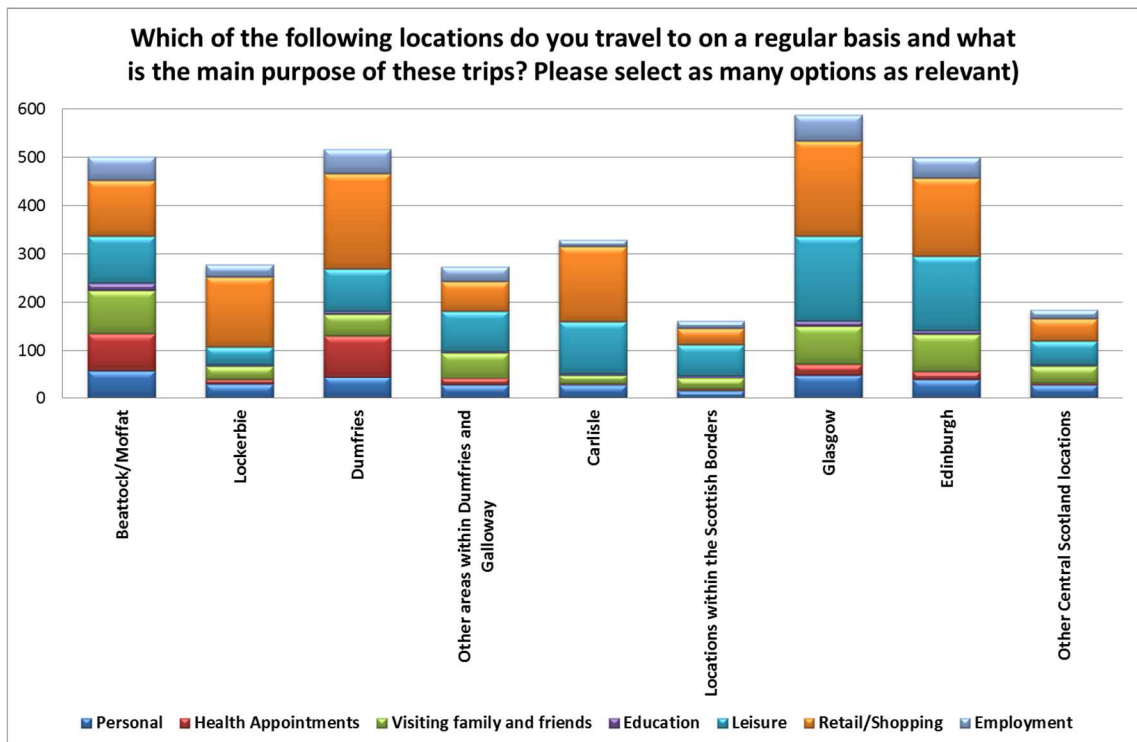


Figure A.5: Locations people regularly travel to and Journey Purpose

Problems on the Transport Network

A.1.8 Respondents were asked two questions with regards transport problems faced in the area. The initial question asked respondents to note if they believed each stated transport problem represented an issue to them. This was a multiple response question with respondents free to comment on each. Results showed that by far the most common problems were:

- Limited choice of travel modes (83%)
- Long travel times to get to destinations (69%)
- Lack of direct public transport routes (65%)

A.1.9 The second question asked respondents to note what they believed to be **the single biggest transport problem in the area**. Whilst the three options listed above were again listed as the biggest issues, limited choice of travel modes was noted as the single biggest transport issue by 42% of respondents. Results can be seen in Figure A.6.

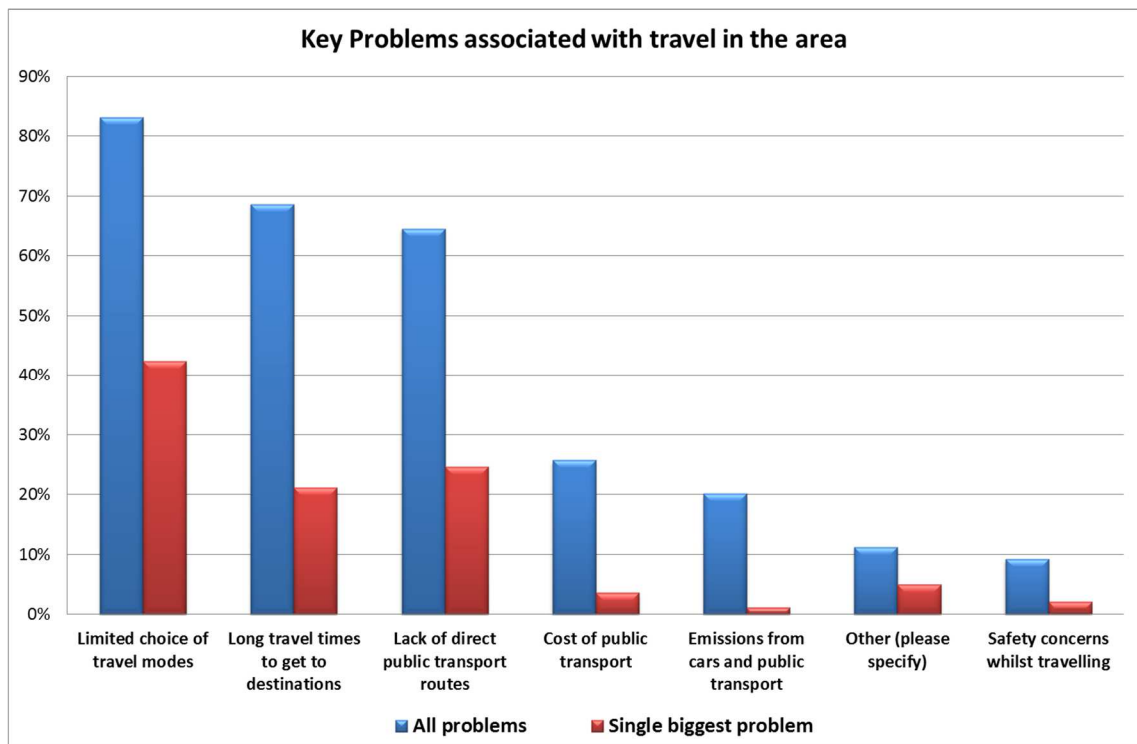


Figure A.6: Key Problems Associated with the Transport Network

Road Network

A.1.10 In total, 304 respondents identified themselves as regular drivers/passengers and were routed to the following questions with regards the road network.

A.1.11 Road users were asked to note the key issues they faced on a regular basis when travelling. Poor quality of roads was the largest issue, noted by 65% of respondents (n=304). Congestion and delay (45%) and being caught behind HGVs and slow moving vehicles (37%) were also noted as key issues. Figure A.7 shows the key problems faced on the road network.

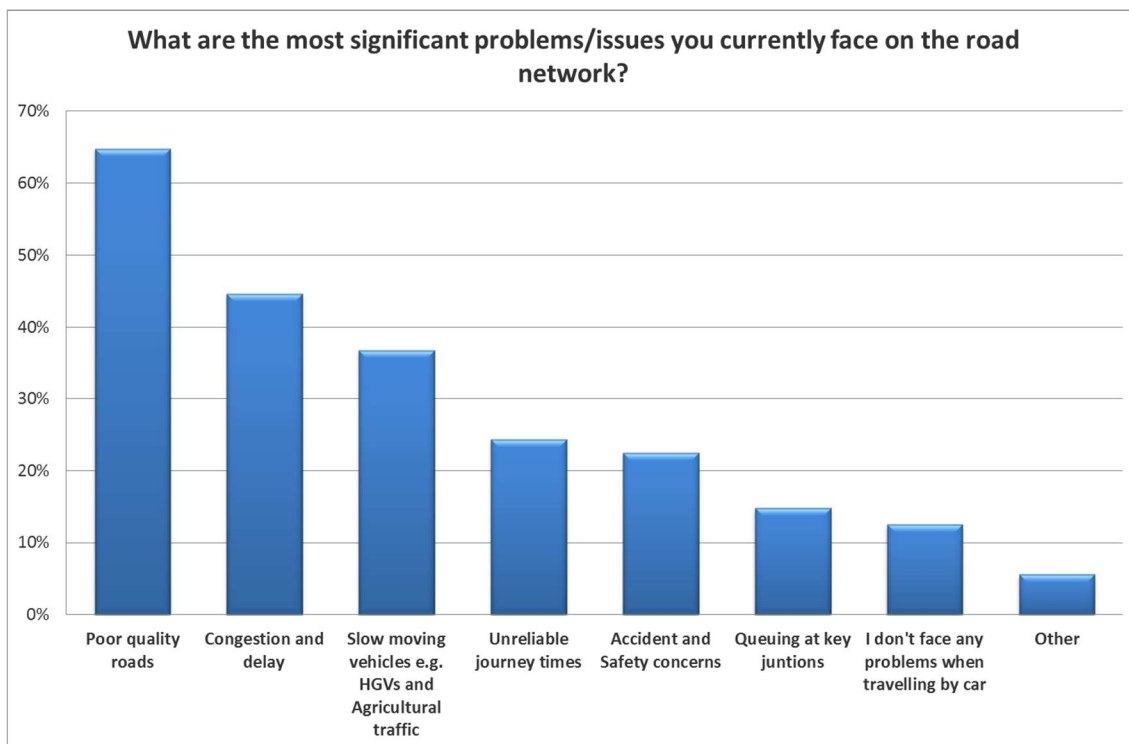


Figure A.7: Issues on the road network

A.1.12 Respondents were asked to consider how the identified problems with the road network impacted upon them. Figure A.8 shows that 55% of respondents (n=271) noted that they had to begin their journey early or late to avoid delays. ‘Difficulties in accessing key services such as health, education and shopping’ was also a key problem, as was ‘reduced access to new or better jobs.’

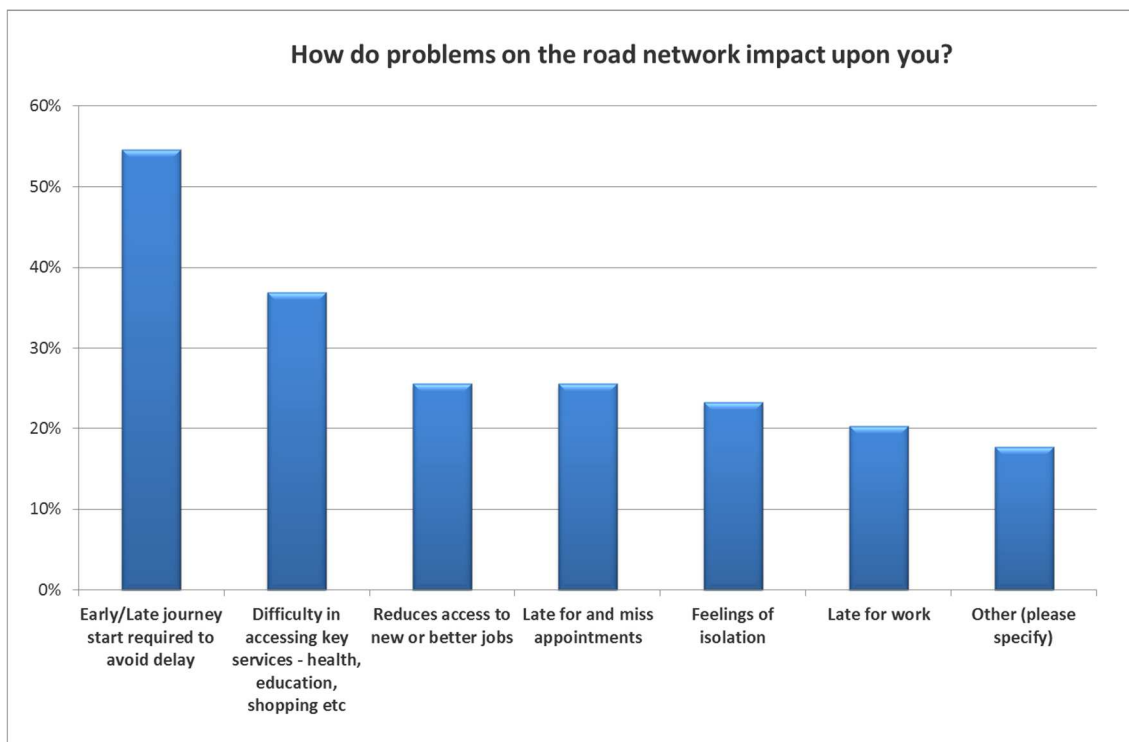


Figure A.8: Impacts of Problems on the road network

Bus Travel

A.1.13 In total, 126 respondents identified themselves as regular bus users. The remaining 211 respondents were asked why they do not currently travel by bus in the study area. 'Long Journey Times' and 'No direct routes to the destination' were the biggest reasons to not travel by bus as noted by 52% and 48% of respondents respectively (n=209). Other common reasons given were, respondents preferring the car (42%) and the low frequencies of buses in the area (41%).

A.1.14 Bus users were asked to note the key issues they faced on a regular basis when travelling. Three issues were clearly prevalent, 'Long journey times' was the largest issue, noted by 52% of respondents (n=126). 'Service Frequency' (51%) and 'lack of direct routes' (49%) were also noted as key issues. Figure A.9 shows the key problems faced on the bus network.

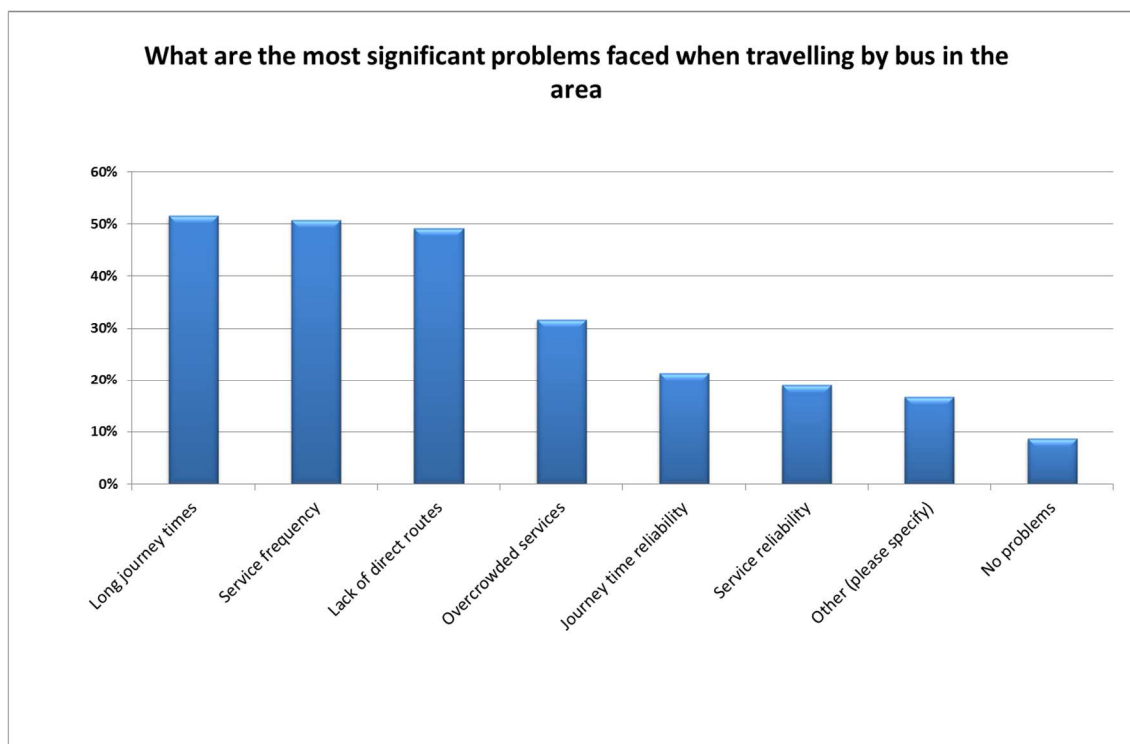


Figure A.9: Problems faced when travelling by bus

A.1.15 Respondents were asked to consider how the identified problems with bus travel impacted upon them. Figure A.10 shows that problems were broadly consistent with those faced by car users. 'Difficulty in accessing key services such as health, education and shopping', was the biggest issue as indicated by 50% of respondents (n=119). Beginning journeys early or late to avoid delay was also noted as a key issue, indicated by 45% of respondents.

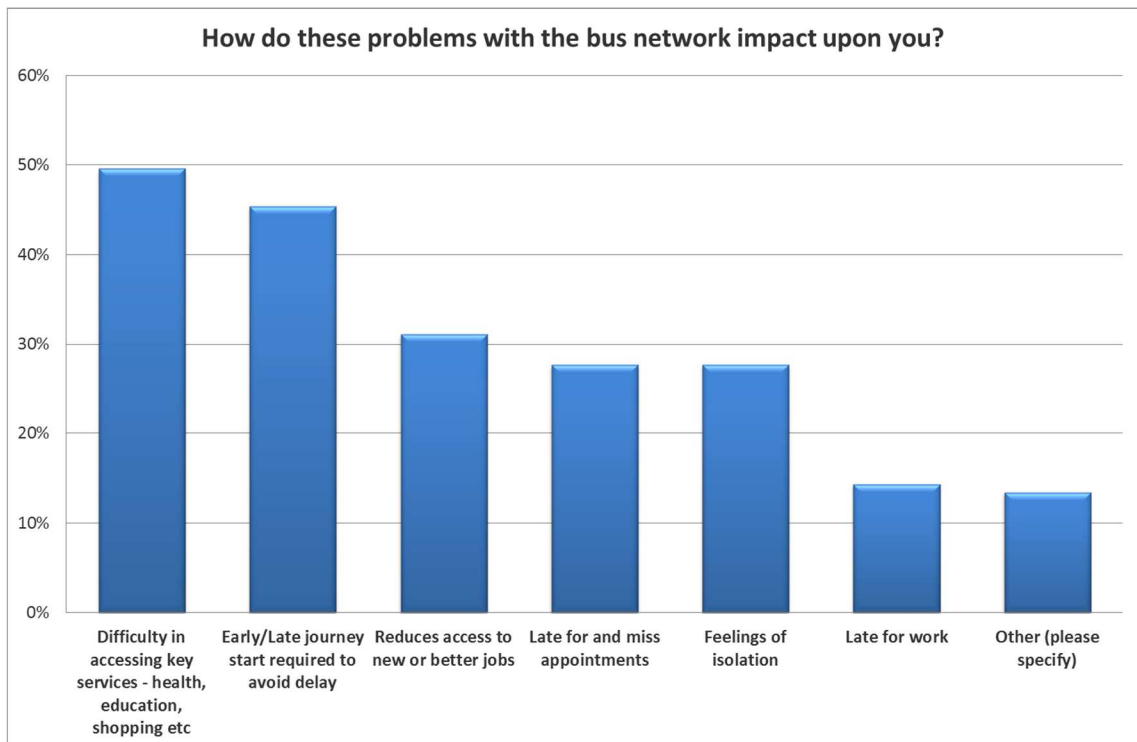


Figure A.10: Impacts of Problems with the bus network

A.1.16 All respondents were asked which improvements to the bus network would have a positive effect on them. Note that this question was not limited to bus users only. ‘Increased bus frequencies’ and ‘increased express bus services to major cities’ were judged to be the most popular improvements, both suggested by 45% of respondents. (n=331). ‘Increased direct bus services’ (41%) and ‘services which run earlier in the morning and later in the evening’ (39%) were also judged to be important. Results are shown in Figure A.11.

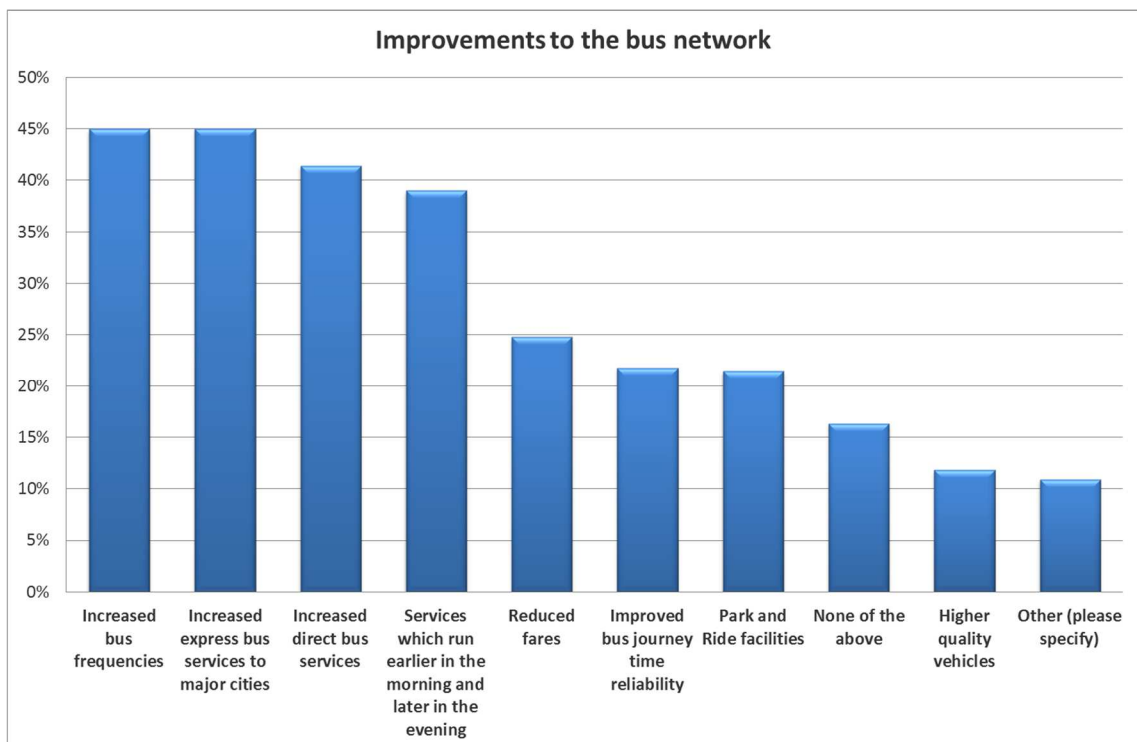


Figure A.11: Appetite for improvements to bus services

Rail Travel

- A.1.17 In total, 100 respondents identified themselves as regular rail users. The remaining 234 respondents were asked why they do not currently travel by rail in the study area. Unsurprisingly, 'Nearest station is located too far away' was the biggest reasons to not travel by rail as noted by 83% of respondents (n=234). Other common reasons given were, 'Easier options than to travel to a railway station and make an onward journey' (38%) and the 'Cost of rail travel' (21%).
- A.1.18 Rail users were asked to note the key issues they faced on a regular basis when travelling. Given the distance to railway stations from the Beattock/Moffat area, it was unsurprising that 'No railway station close enough' was the most common answer, as noted by 66% of respondents (n=101). Long journey times to get to the railway station (59%) and timetable issues (48%) were also noted as key issues. Figure A.12 shows the key problems faced when travelling by rail.

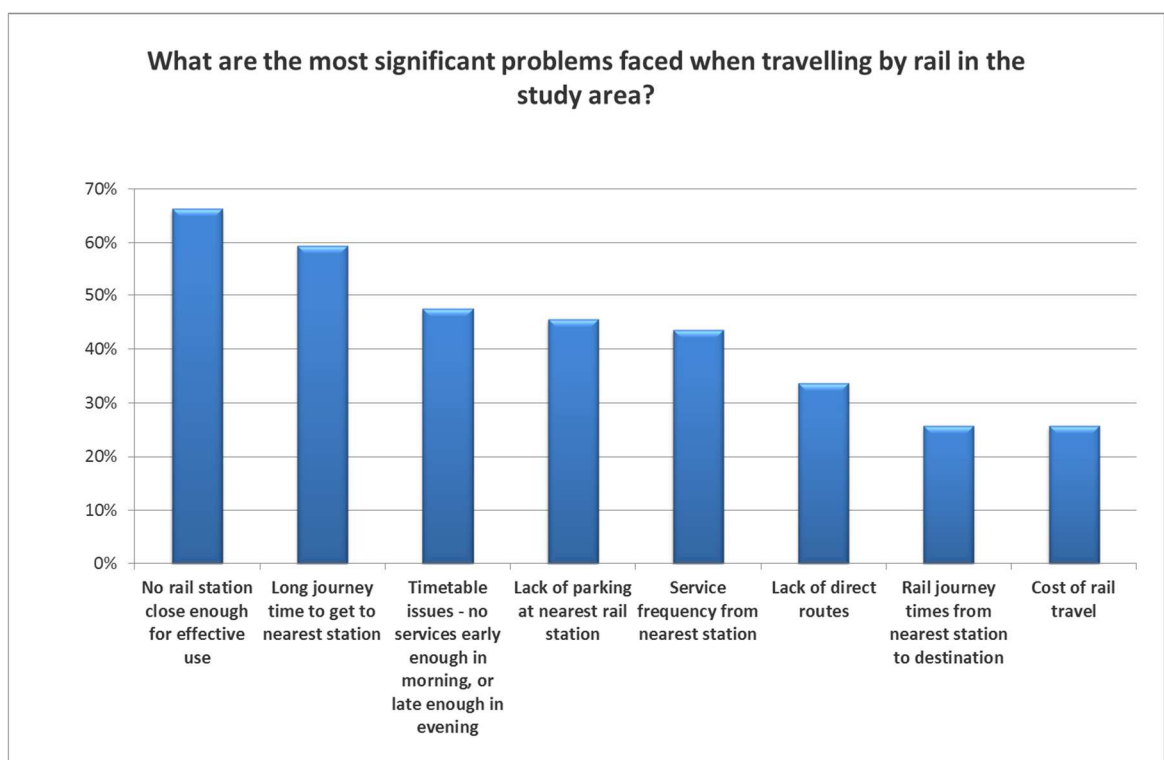


Figure A.12: Impacts of Problems faced when travelling by rail

- A.1.19 Respondents were asked to consider if the introduction of a railway station within the study area would have any impact/effect upon them. In total 89% of respondents (n=333) stated there would be an impact or effect upon them should a station be opened.
- A.1.20 A further question asked how the presence of a new station would impact upon the respondent. The most common answers provided included 'Increased access to retail and leisure opportunities further afield' 86% (n=297), 'Reduce the feeling of distance from towns and cities', 73%, and 'Reduce journey times for travel to access services (health, social)' 60%. Full details are provided within Figure A.13. Interestingly, the results correlate well with earlier questions on where people would like to travel to for trip purposes, suggesting travel for leisure and entertainment opportunities are important in the study area.

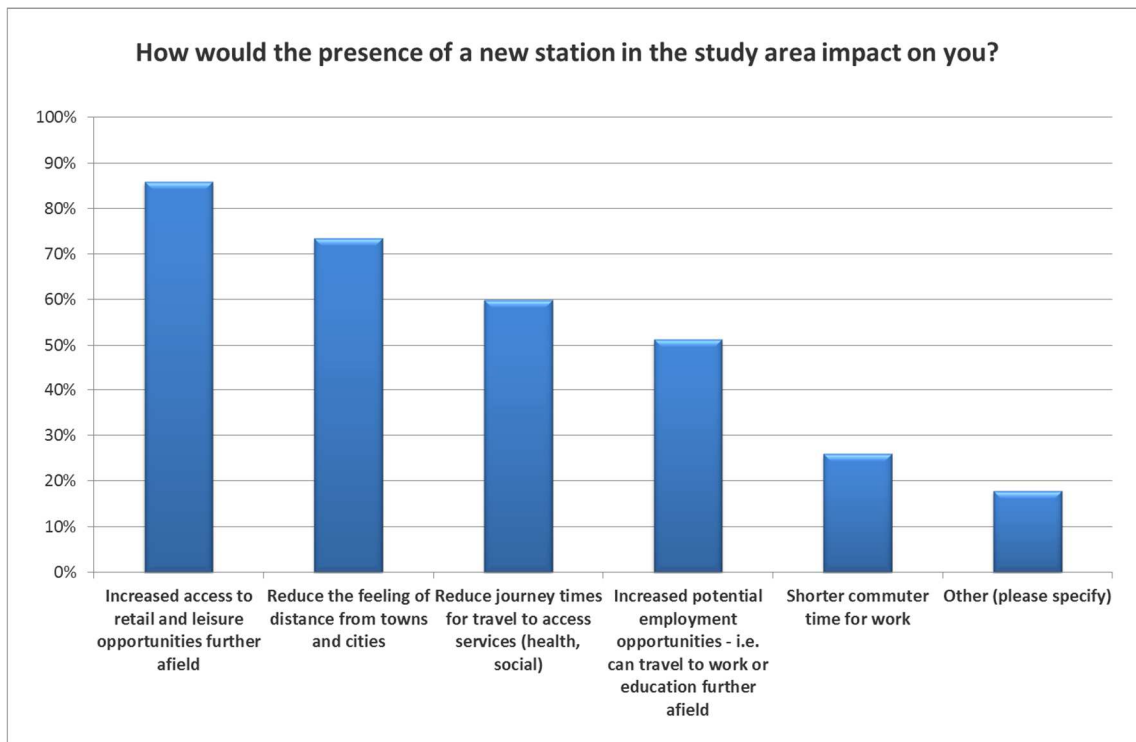


Figure A.13: Impacts of a new railway station in the study area

Active Travel

A.1.21 In total, 136 respondents identified themselves as people who regularly use active travel (walking and cycling).

A.1.22 All respondents were asked what the main barriers to using active modes of travel were. The most common response was that distances were too far to use active modes. This was suggested by (57%) (n=313). This type of answer is typical within a rural location. 'Weather' 42%, 'lack of available walking and cycling routes' 19%, and 'concerns over safety' 17%, were also deemed as barriers to cycling. Barriers to walking and cycling can be seen in Figure A.14.

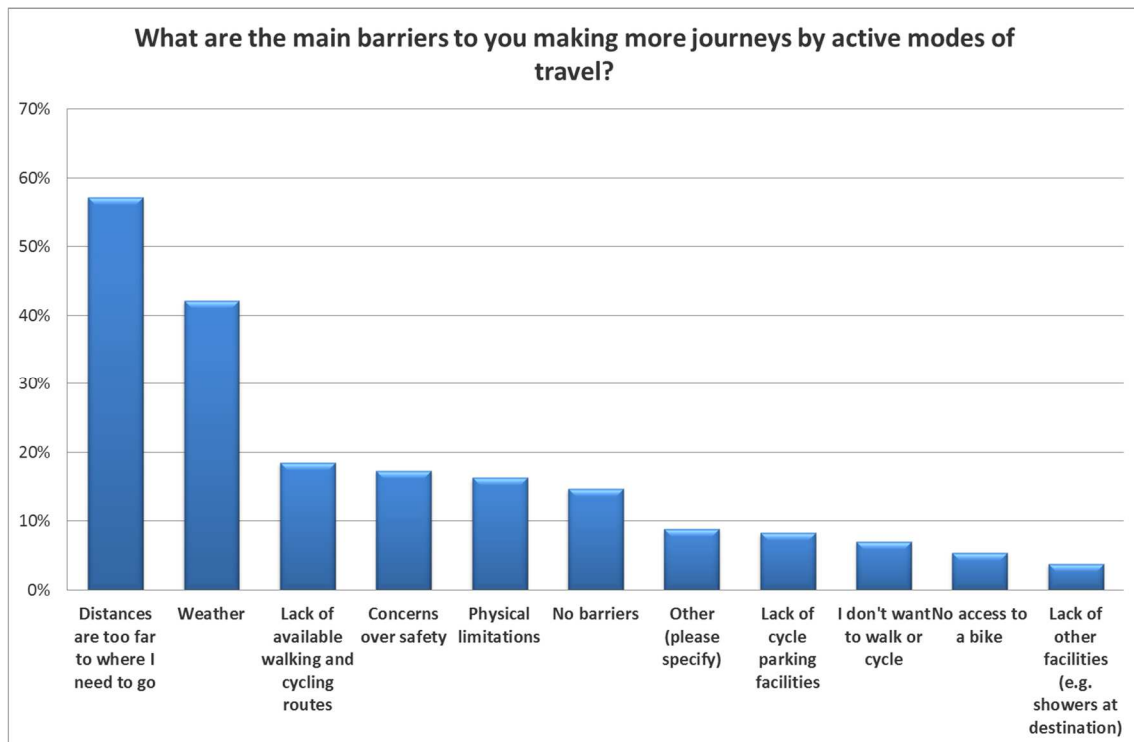


Figure A.14: Barriers to active travel

Suggested Interventions

A.1.23 Respondents were provided a list of mode specific interventions and asked to convey what sort of benefits each would have on them personally, should they be delivered. Interventions included the following:

- Road based improvements
- Additional/enhanced bus services
- Railway station at Beattock with appropriate rail services;
- Improved walking and cycling facilities.

A.1.24 Figure A.15 shows that the public believe road, bus and rail services will all provide benefits however, respondents clearly believe the provision of a railway station at Beattock will provide significant benefits, with 90% of those who answered the rail intervention question (n=326) noting it would provide a major benefit.

A.1.25 Road based improvements were judged to provide major benefits by 43% (n=288), while more than half (52%) (n=295) believed additional and enhanced buses would provide only minor benefits. Interestingly, almost one third (32%) (n=272) thought that improved walking and cycling facilities would have no benefit at all.

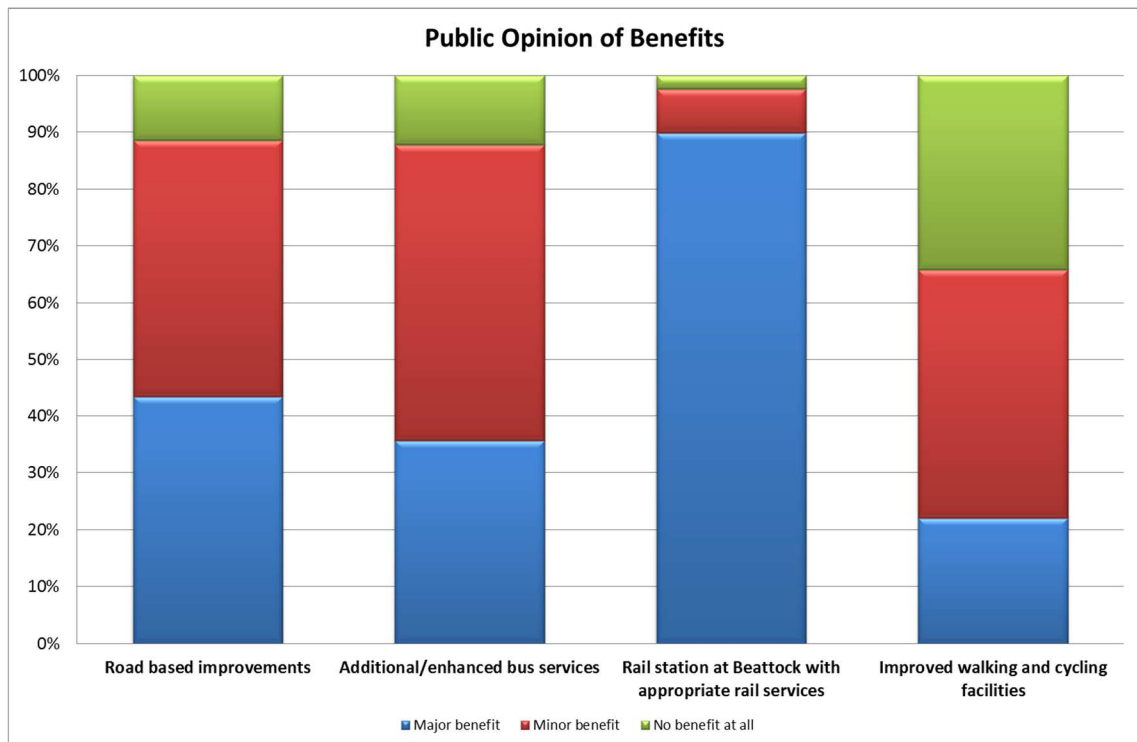


Figure A.15: Opinions on scale of benefits from mode based improvements

Open Responses

- A.1.26 The survey also provided the opportunity for people to provide open comments. Many respondents used this section to call for a new rail link in the area. Responses also included comment on the current poor (or perceived as poor) transport links to Glasgow and Edinburgh and the inconvenience of having to detour to the nearest station at Lockerbie in order to catch a service.

“Beattock Station would be a great advantage as I travel frequently by rail and at the moment I have to travel to Lockerbie or Carlisle for a connecting train to my destination.”

“Public transport to Edinburgh is uncomfortable and long unless we go 14 miles south to Lockerbie. End up driving!”

“My main concern is the lack of direct transport to major cities and poor access for working people for education and job opportunities”

- A.1.27 Timetabling of existing services was also a common theme with many responses commenting upon the impacts of or lack of, transport integration, the speed and efficiency of their journey, and consequently access to education and employment opportunities.

“Bus timetables don’t link with rail timetable so is awkward to plan a journey using bus and rail.”

“Cycling provision is poor, cyclists being forced to re-join busy roads or ride beside them. Interconnections seem non-existent, buses arrive in Lockerbie just after trains leave etc.”

- A.1.28 Similar to the above, there were also comments raised from the elderly and disabled residents that rely, or would like to rely, on public transport as an alternative to the car. In general, the lack of rail, and poor transport integration was the key issue.

“My disabled wife and I could visit places currently inaccessible for us by bus and we would not be confident travelling by car.”

“As pensioners, we would feel more comfortable and safer travelling by train to further afield. My wife suffered a traumatic traffic accident some years ago and is not comfortable going on major roads with HGV. We both feel a suitable railway station would give the area a well-deserved boost in visitors and the economy by making it more accessible to visitors, family and workers.”

- A.1.29 Finally, many consider a new station at Beattock a significant way to boost local economy. Responses noted the ability of people to travel further afield for jobs and education, and the potential to grow tourism in the local area.

“A station at Beattock would increase the opportunities for economic rejuvenation in Moffat and surrounding area, people would visit for day trips and allow wealthier commuters to settle and invest in Moffat whilst still working in the cities. It would also allow local residents access to the cities for work and social reasons. The station would not need to be manned.”

A.2 Bus Operators

Stagecoach

- A.2.1 A meeting with Stagecoach West Scotland was held on the 27th April 2016.
- A.2.2 The main bus service running through the study area is the X74 which accesses Glasgow. This is a commercial service and operates hourly, with a small time period in the middle of the day that the timetable cannot accommodate hourly operations. Aside from the X74, there is also a small, tendered service which operates between Beattock and Lockerbie. This does not have a large demand and only uses small vehicles.
- A.2.3 The consultation highlighted:
- The main locations which people are trying to access by bus from the study area are Dumfries and Glasgow.
 - Stagecoach suggested there may be anecdotal evidence that people from the area want improved access to Edinburgh.
 - Stagecoach said there were no real problems which affect the services operating in the Moffat/Beattock study area.
 - Stagecoach would like to see further investment in the A701 to make it straighter and faster although they understand it is not a priority.
 - The X74 is a commercial service which does well. The busiest period is the AM peak. Stagecoach noted that the split between fare paying passengers and concessions is closer than other services across the SWestrans area; however, in the off-peak the X74 still has a large proportion of concessionary passengers who wish to access Glasgow for retail/leisure.
 - The main issues which affect the Stagecoach services are no-where near the study area. At the time of consultation, the current long term road improvements on the A74 (M) near Hamilton/Raith interchange were causing delays, as does accessing and leaving Glasgow City Centre.
 - Stagecoach believes there are no capacity issues on the Service X74 and suggested that if the service was over capacity, Stagecoach would add additional coaches.

- The current vehicles used on the routes are of a high specification with 68 seaters with a raised passenger deck. This allows extensive luggage areas, including bays for cycles. Coaches are equipped with leather seats, WiFi, and air conditioning as standard. At some point in the future Stagecoach has plans to provide additional services during the off-peak and make the X74 an hourly service as standard across the day.
- The major issue which affects bus services in the area is **congestion within Dumfries town** centre itself which causes timetable delays and then knock on effects for bus services as they try to access, pass through and leave the town. Issues in Dumfries lead to problems of congestion and journey time reliability. Stagecoach believes it is more important to improve issues within Dumfries which may include priority measures than other interventions elsewhere.

Local bus operators

- A.2.4 Discussion with **SWestrans** highlighted their current subsidising of the operation of 51 timetabled local bus services. Recent budget cuts, seeing the overall subsidy available drop from £3.74m in 2015/16 to £3.40m in 2018/19, has led to the reduction of a number of services. Reductions were aimed at services with the lowest demand level at evenings and on Sunday's in order to minimise the impact to bus users. The on-going constrained budget for subsidised services is a key issue when considering option generation for this study.

A.3 Community Transport

- A.3.1 Telephone consultation was undertaken with Annadale Community Transport Services (ACTS) on 4th May 2016. ACTS provides community transport services covering the Annadale area, within which Beattock/Moffat are located. The services provided include:

- Group transport – where vehicles are hired out to voluntary and community groups in the Annadale area. There are minibuses based in Moffat, Annan and Gretna which are available to hire.
- Registered bus services – with the organisation running two bus routes between Annan-Peebles (last Thursday of the month) and Moffat – Carlisle (1st and 3rd Thursday) under Section 22 permits which pick up in Beattock; and
- Individual transport – door to door transport for people who have difficulty using conventional public transport. This service is available for Beattock/Moffat residents.

- A.3.2 The discussion highlighted:

- The organisation has not experienced any issues when providing the above services and has not experienced any issues with congestion and bus stop infrastructure which they consider is fit for purpose.
- They are not aware of any demand for any other services in Beattock/Moffat and they have not been approached to provide any other services.

A.4 Transport Scotland

- A.4.1 A meeting with Transport Scotland was held on 16th March 2016. Transport Scotland explained that they would need to see the outcome of the STAG Case for Change before they would be able to consider any transport proposals and provide comment. A discussion was held with Transport Scotland on 22 November 2018 to discuss their comments on the report overall. Cognisance of Transport Scotland's comments has been undertaken in the development of this report.

A.5 Rail Operators

Network Rail

A.5.1 A meeting with a representative from Network Rail was held on 27th May 2016. A number of general comments (which apply to the more detailed stages of the STAG appraisal) were noted as follows:

- Where new stations are proposed, the full STAG appraisal should include: a detailed analysis of capacity on the entire route; the timetable on the entire route; a costing exercise for construction of a new station; and costing for all mitigation measures (with the latter considered in collaboration with Network Rail and other stakeholders);
- It was noted that the effect of providing a new station on the wider rail network and the associated mitigation costs are often given insufficient consideration in appraisals; and
- In the first instance only suitably accessible stations should be considered with 'low cost' stations such as Conon Bridge (which did not meet all modern standards in terms of accessibility and provisions) to be avoided.

A.5.2 With respect to Beattock, the following was noted:

- The West Coast Main Line is a very busy and strategically important route which carries TransPennine Express, Virgin West Coast and Freight Services. The line is currently approaching capacity which would make the introduction of stops and services challenging;
- The introduction of a new station could increase journey times on the route and impact on the timetabling of existing services;
- There is a steep gradient at Beattock which could further impact on the timetable (of both stopping and non-stopping trains) if trains were to stop at a station at Beattock;
- Questions were raised as to whether a commercial intercity operator would be interested in stopping at Beattock;
- The development of High Speed Rail will place further constraints on the West Coast Main Line which will impact the viability of a new station at Beattock. However, as High Speed Rail develops, there will be the requirement to develop additional passing places and potential implications on rail gauge and rolling stock. As such, if a station at Beattock is shown to be feasible, the timing of such an intervention could be appropriate.

ScotRail

A.5.3 A meeting with a representative from ScotRail was held on 29th April 2016. It was noted that:

- At the moment, ScotRail are focussed on the existing commitments providing station expansions and redevelopments at and including the following areas: Perth, Stirling, Motherwell and Aberdeen.
- Whilst ScotRail do get involved with Network Rail and Transport Scotland with discussions on moving potential new stations forward, it is not ScotRail's role to identify and pursue new stations. ScotRail take guidance from the priorities set by Transport Scotland. ScotRail do suggest additional projects to Transport Scotland, but generally not in terms of new stations. Projects that ScotRail identify and suggest will often be at existing stations which they can further develop. Enhancements to parking stock being a key example. At present, the majority of activity is focussed on the North East and Inverness region.

A.5.4 It should be noted that ScotRail explicitly said it is not their role to judge station viability but have noted a number of concerns with a potential station at Beattock, including:

- There are major constraints with train paths on the West Coast Main Line. The requirement for a stopping passenger service to stay in-front of faster intercity and freight services makes things difficult. There are key priorities on this route;
- ScotRail would be very surprised if both the DfT and Transport Scotland did not have significant concerns about a station at Beattock; and
- Currently, ScotRail have no plans in place to extend operations south of Carstairs.

TransPennine

A.5.5 A meeting with the rail service provider, First TransPennine and a representative from the Rail Policy Team at Transport Scotland was held on 15 February 2016. It was noted that:

- First TransPennine inserted a stop at Lockerbie and Carstairs into their timetable to allow passengers from the area access to the first northbound train at Lockerbie, and then the opportunity to transfer to Edinburgh bound ScotRail services at Carstairs;
- In last five years, travel by air between Glasgow – Manchester has gone down by 70%, and between Edinburgh – Manchester has gone down by 60%; and
- Transport Scotland noted that First TransPennine has a focus on connectivity and strengthening communities and that their bid for operating services does not reduce calls at Lockerbie, and will potentially increase service stops at the station if timetables and demand allow.

A.5.6 The discussion highlighted:

- First TransPennine are keen to ensure that stakeholders and the public view them as an intercity operator. At present, there are concerns they are a local service or somewhere between local and intercity, however the business plan and the First TransPennine bid places them firmly in the Intercity market. Whilst there is a small number of non-city stations served, this should not detract from the main purpose of the operation;
- Adding in small village stations is not high on the agenda however First TransPennine said that if there is an identified need and an obvious business case for introducing a new station at a location such as Beattock, they would consider it. At present, the only station First TransPennine are going to add on the route is Motherwell;
- First TransPennine noted there are key issues with adding stations, notably the number of available paths, and the fact the First TransPennine service has to be able to stay in front of faster Virgin services. Adding stations can jeopardise this and have significant impacts on the network;
- In terms of elements which can help support a service, First TransPennine noted the following:
 - Current population of the catchment area;
 - Planned housing developments and housing allocations;
 - Planned developments in relation to tourism / education / health etc.
- First TransPennine conceded there will no doubt be a number of passengers from the Beattock/Moffat area who travel to Lockerbie to access the First TransPennine service

however they have no available data. They expect most of these Beattock passengers will be travelling to Edinburgh as they expect any passengers travelling to Glasgow may drive north to Carstairs or Larkhall and board a ScotRail service there.

Beattock Station Action Group Survey (2012 – 2013)

- A.5.7 Prior to the public survey undertaken as part of this study, BSAG carried out a public survey over a six-month period in 2012–13 to find out people's views on the proposal to reopen Beattock Station, with respondents asked whether they supported the reopening of the station and how this could benefit them and the wider community. While this provides further detail from the public, it should be noted that the survey was purely rail, and not multi-modal focussed.
- A.5.8 The survey received 643 responses - note that this is greater than the number of responses to the survey undertaken during the initial stages of this study, and the lower number of responses to the more recent public survey may be due to local 'fatigue' with those already having completed the BSAG survey deciding not to participate again.
- A.5.9 The main findings from the survey were:
- A total of 471 people said they would travel to and from the station for leisure, 131 for commuting and 82 for other business reasons;
 - Glasgow was the top destination, followed closely by Edinburgh, then Carlisle, London and Manchester;
 - Nearly 230 adults said they would use a train from Beattock weekly and 106 said they would use it daily.
 - Key benefits noted included:
 - Access to cities and the rail network;
 - Less reliance on cars;
 - More opportunities for visiting family;
 - Greater independence and opportunities for young people;
 - Wider community benefit from increased tourism, employment, regeneration and improved commuting.

Appendix B Transport Supply and Trends

B.1 Existing Bus Services

B.1.1 The existing services to/from the Beattock and Moffat study area include:

- Service 74 / X74 – Beattock to Dumfries / Glasgow - Operated by Stagecoach
- Service 101 – Edinburgh to Dumfries – Operated by Stagecoach
- Service 380 – Moffat/Beattock to Lockerbie – Operated by Stagecoach/Houstons Minicoaches

B.1.2 The Service 74 / X74 is delivered by Stagecoach West Scotland and from Beattock to Glasgow begins operating at 6:45 in the morning peak, then hourly from 9:20 to 18:20 with a final service at 21:20. On Sunday, the service operates every 2 hours from 07:20 to 21:20. Fares to Dumfries and Glasgow are £3.30 and £8.20 respectively.

B.1.3 Service 101 is delivered by Stagecoach West Scotland and operates Monday to Saturday with 3 services at 11:34, 15:34 and 22:55 respectively from Moffat (via Beattock) to Dumfries with services at 05:30, 13:00 and 16:30 from Dumfries to Beattock/Moffat. Similarly, there are 3 services around 06:01, 13:42 and 17:11 respectively from Beattock (via Moffat) to Edinburgh with services at 09:20, 13:20 and 20:30 from Edinburgh to Beattock/Moffat. On Sunday, there is a single service at approximately 10:00 from Dumfries and 20:40 from Edinburgh. Fares to Dumfries and Edinburgh are £3.30 and £7.80 respectively.

B.1.4 The 74/X74, 101 and 114 bus services call at a bus stop near Gracefield Arts Centre on the A701 Edinburgh Road which is approximately a six-minute walk from Dumfries Railway Station.

B.1.5 Service 380 is operated by Houston's Minicoaches and provides services roughly every 50 minutes from 07:20 to 09:35 (at Beattock). Following this, there is a service approximately every 1.5 hours from 11:35 to 18:30. On Saturday and Sundays, there is a service every two hours beginning at 11:30 and finishing at 17:30.

B.1.6 The Service 380 calls at a bus stop opposite the Bridge Inn on the B708 Bridge Street which is approximately a two to 3-minute walk from Lockerbie Railway Station. Fares to Lockerbie are £2.70.

B.1.7 Beattock currently has good bus links to/from Glasgow city centre (Buchanan Bus Station) with regular (hourly) services operated by Stagecoach West Scotland.

B.2 Existing Rail Services

B.2.1 The nearest railway station is around 25km south at Lockerbie and is located on the West Coast Main Line with all services provided by either Virgin Trains or First TransPennine Express.

B.2.2 From Lockerbie in the northbound direction there are eight weekday services to Edinburgh a day and thirteen services to Glasgow. In the southbound direction there are 19 weekday services per day to destinations including Manchester Airport and Wigan with a very limited number providing connections direct to London. On a Saturday there are eight services to Edinburgh, eight to Glasgow and 17 services southbound.

B.2.3 Monday to Saturday services operate between around 07:00 and finish around 22:30. On Sundays, services commence at around 10:00 and finish around 23:00.

- B.2.4 Weekday and Saturday peak- and daytime services are a mix of ‘express’ and ‘stopping’ services, with a journey time to Edinburgh being between 1 hour and 5 minutes and 1 hour and 26 minutes, while journey times to Glasgow Central being between 59 minutes and 1 hour and 7 minutes. Evening and Sunday service journey times are around 1 hour and 5 minutes to both Edinburgh and Glasgow Central respectively.
- B.2.5 The nearest railway station to the north of Beattock is around 60km north at Carstairs, located on the West Coast Main Line with services provided by ScotRail. From Carstairs, rail services connect directly to Glasgow, Edinburgh and Ayr, and for those travelling north to Glasgow or Edinburgh is likely to be more preferable than accessing the rail network at Lockerbie.
- B.2.6 In addition, Dumfries station is around 29km to the south west of Beattock. This is on the Glasgow South West Line.
- B.2.7 Table B.1 shows the typical journey times and adult fares from Lockerbie to a range of destinations.

Table B.1: Approximate Journey Times and Typical Fares

From	To	Approximate Journey Time (minutes)	Anytime single	Anytime return	Off-peak return
Lockerbie	Glasgow	65	£15.40	£30.90	£20.50
	Edinburgh	60	£19.40	£38.10	£31.20
	Carlisle	20	£13.60	£16.00	£16.00
	Carstairs	33	£15.40	£30.90	£22.90

B.3 Public Transport Benchmarking

- B.3.1 Table B.2 compares the number of buses / trains and the average journey time to key destinations from Beattock and a number of other towns in Dumfries and Galloway.

Table B.2: Public Transport Benchmarking

		Beattock	Annan	Lockerbie	Castle Douglas
Railway Station		No	Yes	Yes	No
Public Transport Mode Share		3%	4%	3%	5%
To Glasgow (Weekday)	Bus	13	0	0	0
	Number of: Trains	0	8	10	0
To Edinburgh (Weekday)	Bus	3	0	0	0
	Number of: Trains	0	0	6	0
To Dumfries (Weekday)	Bus	18	29	22	15

		Beattock	Annan	Lockerbie	Castle Douglas
Number of:	Trains	0	0	0	0
	Bus	0	4	29	1
To Carlisle (Weekday)	Trains	0	17	13	0
Average Journey Time:	Bus	0	80	0	0
	Trains	0	62	78	0
To Edinburgh (Weekday)	Bus	159	0	0	0
	Trains	0	67	0	0
Average Journey Time:	Bus	29	35	45	34
	Trains	0	0	27	0
To Carlisle (Weekday)	Bus	0	80	0	70
	Trains	0	23	65	0

B.3.2 As can be seen in Table B.2 Beattock has a very similar mode share to several other towns in Dumfries and Galloway, including two that have a railway station. This would indicate that the bus market in Beattock is very competitive to enable a similar mode share trend.

B.3.3 Table B.2 also highlights the fact that due to the close proximity of Beattock to the M74 (M) corridor it receives connectivity to both Glasgow and Edinburgh which other towns do not necessarily have. Average journey time on the other hand does emphasise the fact that these journeys are still lengthy by bus, compared to rail as highlighted in the Lockerbie example.

B.4 Public Transport vs. Private Car Travel Times

B.4.1 Table B.4 shows a comparison of approximate public transport travel times compared to that of the private car and shows, in most cases, the much longer public transport times compared to travel time by car. Note that the travel times are taken in uncongested conditions for the car and for public transport takes the fastest journey time possible over the entire day.

Table B.3: Approximate Public Transport vs. Private Car Journey Times

From	Travel Time To (minutes)							
	Dumfries		Lockerbie		Edinburgh		Glasgow	
	Car	Public Transport	Car	Public Transport	Car	Public Transport	Car	Public Transport
Beattock	35	40	25	37	90	135 - 150	55	95
Moffat	35	40	25	35	90	135 - 150	60	85

B.5 Census Travel-to-Work

- B.5.1 The travel-to-work analysis below makes use of 2011 Census data for Scotland at Output Area level for the mode of travel to work and at Intermediate Geography level for the distribution of travel to work patterns (as explained in Appendix D of this report). Figure B.1 shows the main mode used for travel-to-work for the Beattock and Moffat study area residents.

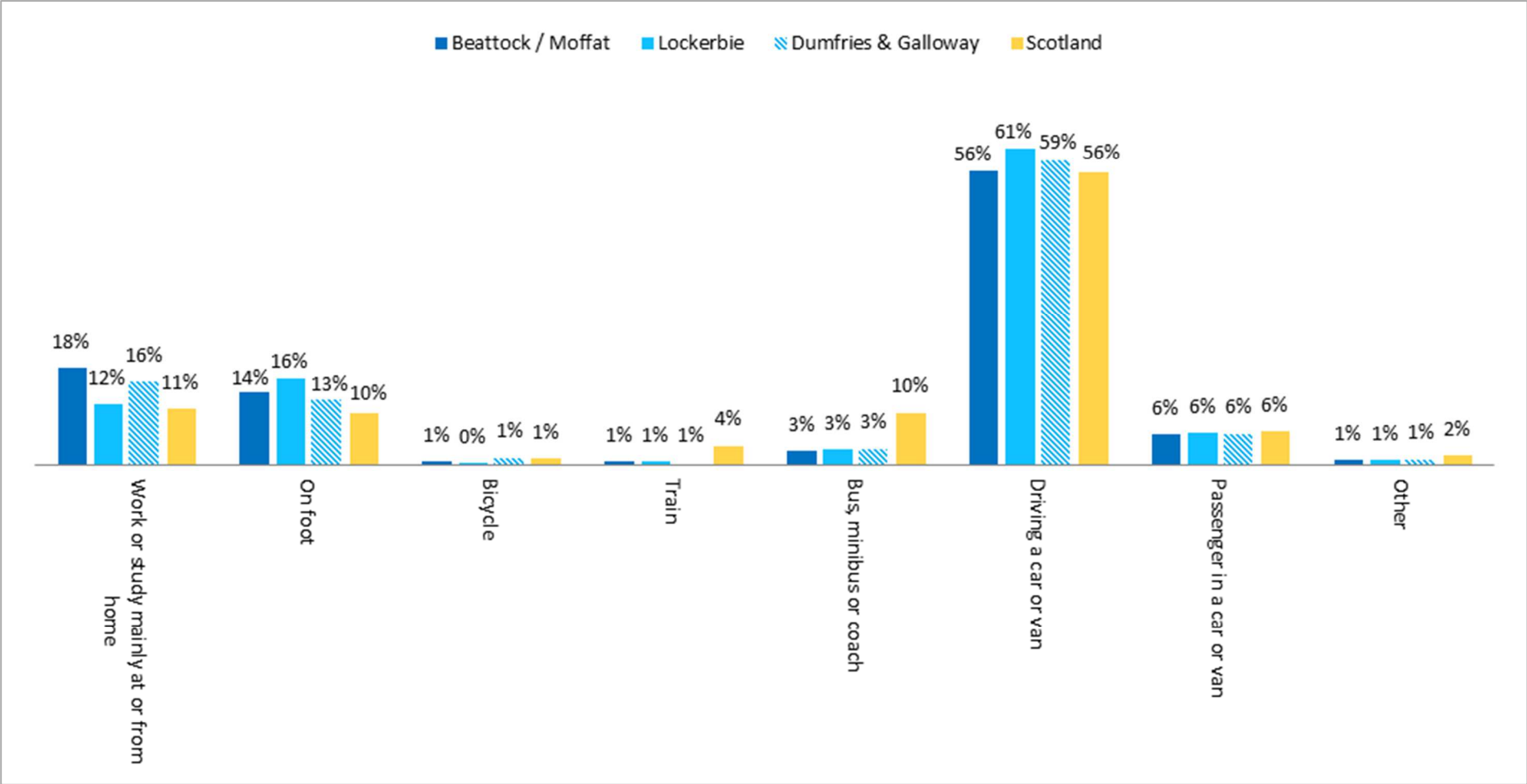


Figure B.1: Method of Travel-to-Work (Source: Census 2011)

B.5.2 Table B.4 shows the main work destinations for people living in the study area. Key points are:

- the majority of those who live in the study area work in other towns within the Dumfries and Galloway local authority or have no fixed place of work;
- the residents from the study area mainly commute to Beattock, Moffat and Eskdalemuir (538 people), Nithside and Nunholm (131) and Lockerbie and Mid Annandale (105 people) in Dumfries and Galloway;
- the proportion of residents who commute to either Glasgow or Edinburgh is considerably low;
- the main destination for commuters within the Glasgow local authority area is Glasgow City Centre; and
- the proportion of residents working at or from home is rather high at 19%.

Table B.4: Distribution of Travel-to-Work Patterns – Main Work Destinations (Source: Census 2011)

	Study Area (Residence)	% Study Area
Dumfries and Galloway	1,121	58%
Working at Home	367	19%
No Fixed Place of Work	255	13%
South Lanarkshire	33	2%
Carlisle	21	1%
Glasgow City	26	1%
Edinburgh, City of	16	1%
North Lanarkshire	18	1%
Other	76	4%

B.5.3 Figure B.2 constitutes the graphic representation of the figures included Table B.4 and reinforces the idea that residents in the study area mostly commute locally.

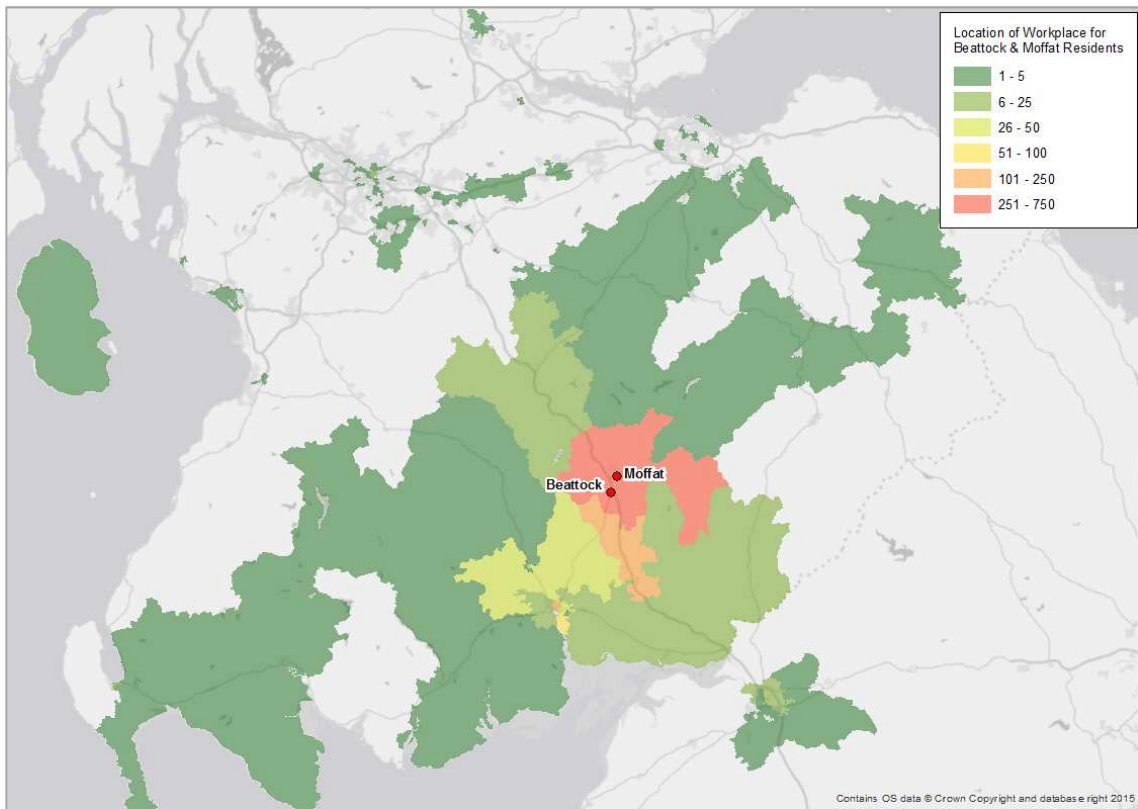


Figure B.2: Distribution of Travel-to-Work patterns – Main Work Destinations (Source: Census 2011)

B.5.4 Table B.5 displays the main places of residence for people working in Beattock and Moffat. Key points are:

- The majority of people who work in the study area live in towns within Dumfries and Galloway; the top three areas are Moffat, Beattock and Eskdalemuir (538 people), Lockerbie and Mid Annandale (40 people) and Lochmaben and Parkgate (32 people):
- Of the total people working in the study area, the proportion commuting from outside Dumfries and Galloway is only 6%.

Table B.5: Distribution of Travel-to-Work Patterns – Main Places of Residence (Source: Census 2011)

	Study Area (Workplace)	% Study Area
Dumfries and Galloway	737	94%
South Lanarkshire	21	3%
North Lanarkshire	5	1%
Scottish Borders	5	1%
Other	15	1%

Appendix C Accessibility Baseline

- C.1.1 Experian UK data was used to calculate car drive time accessibility for the study area. Figure C.1 illustrates car drive times in the AM peak period (0700-0959) from a central point in Beattock. The isochrones indicate the differing drive times in five minute bands from 5 minutes to 30 minutes, which was chosen as the upmost value someone would drive to use a potential railway station at this location.

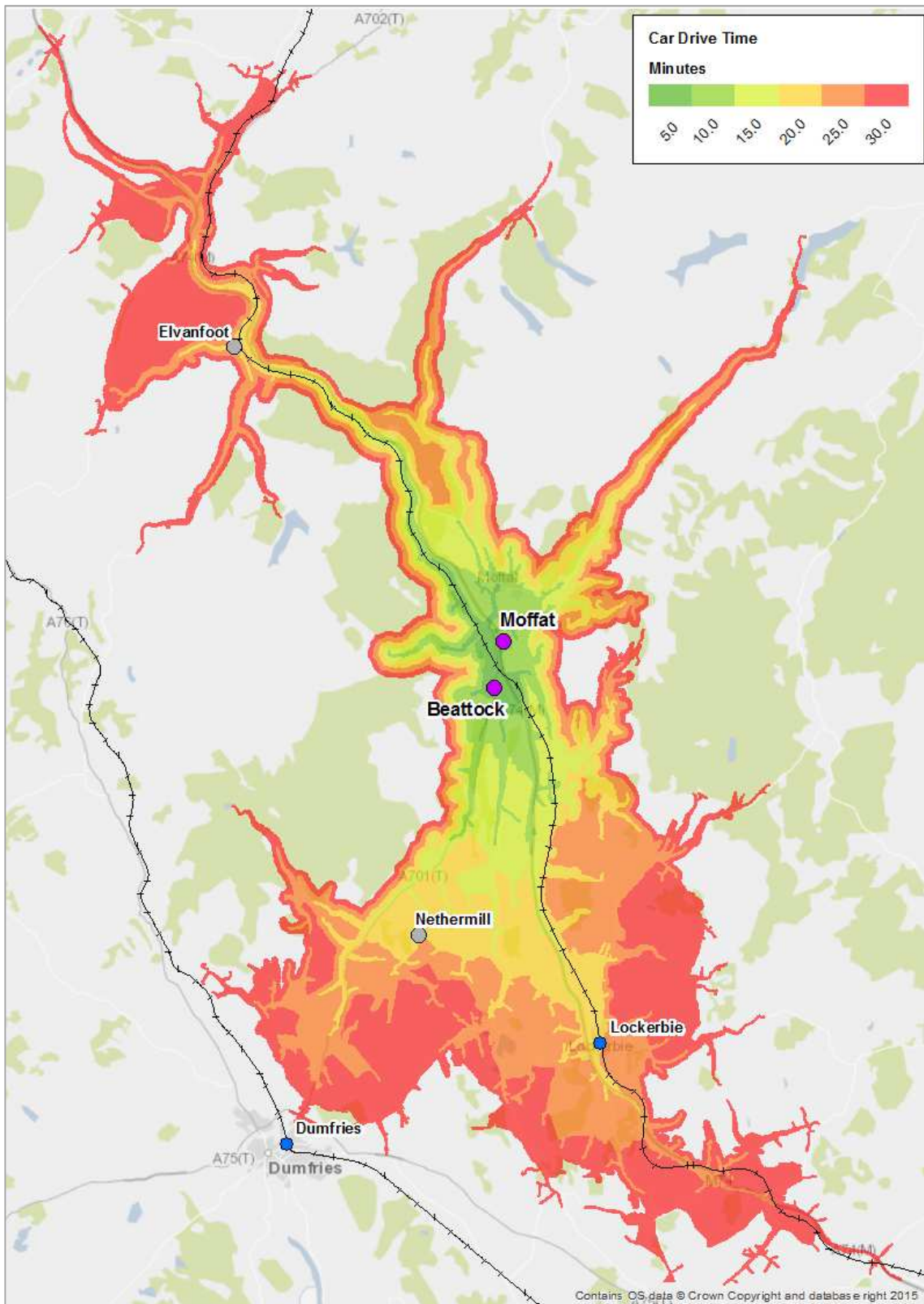


Figure C.1: Car Drive Times in the AM Peak Period (0700-0959)

C.1.2 As can be seen in Figure C.1, currently only Lockerbie railway station is located in relative close proximity to the settlements, around a 20 minute drive to the south. Also due to the road network in the area, road travel times are longer, therefore, the drive time isochrones are quite

geographically restrictive to the east and west of Beattock, whereas, the stretch further North and South due to the M74 (M) corridor. Dumfries railway station just lies out with a 30 minute drive from Beattock. Carstairs Railway Station to the north is beyond a 30 minute drive from Beattock and when accessing northern destinations it is unlikely that those wishing to access the rail network would drive southbound to Lockerbie to join the network;

C.1.3 Figure C.2 highlights the potential population catchment within each of these five minute time bands. The numbers produced are based on 2011 census population data and represent total population. Each person in the figure represents 1,000 people.

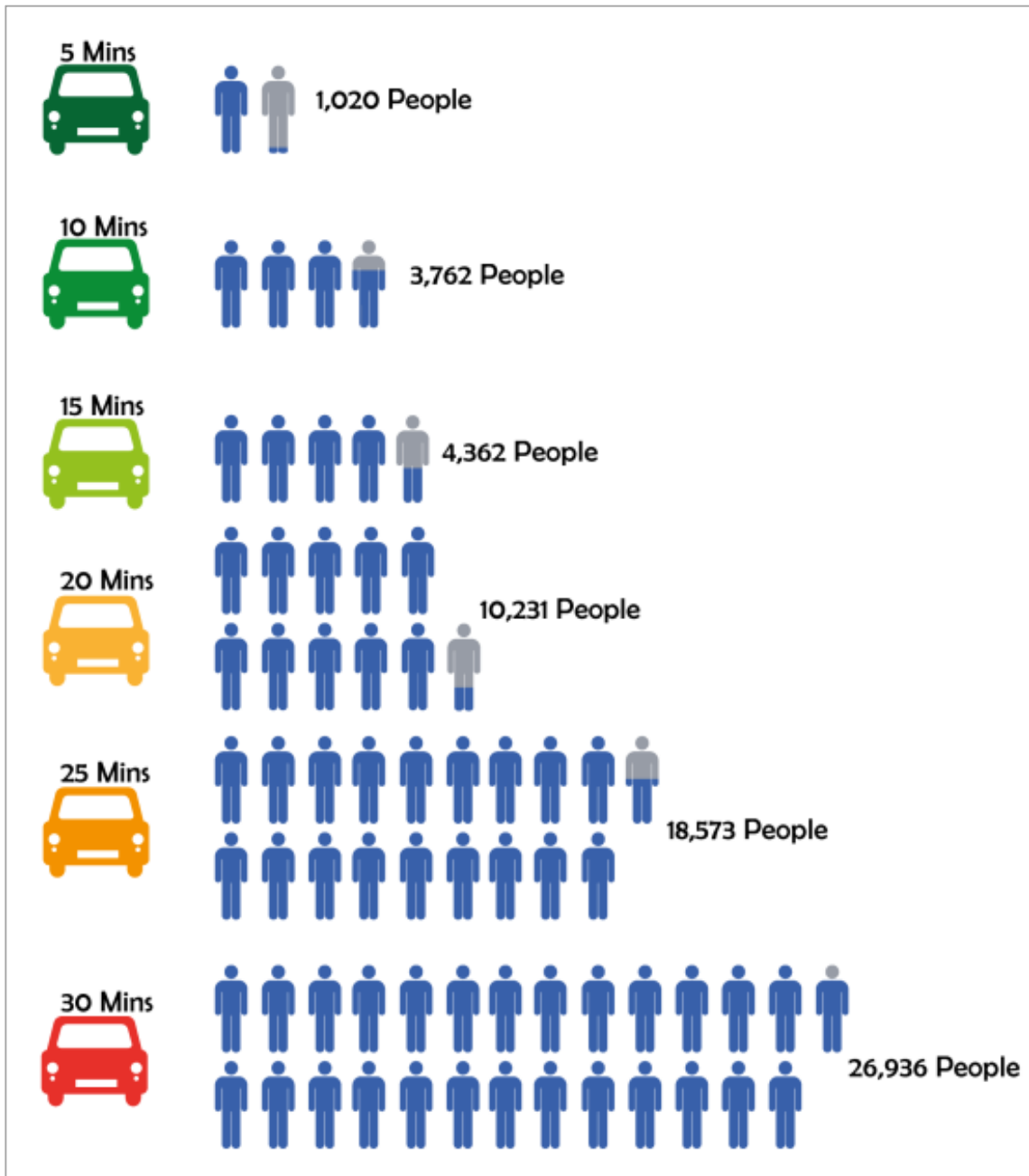


Figure C.2: Population Catchment in Five Minute Time Bands

C.1.4 As can be seen in Figure C.2, there is a considerable population catchment within 30 minutes of Beattock. As time progresses past 15 minutes, the population increases by more than double

the value within the 15 minutes catchment. Using a more conservative travel time of 20 minutes would still provide a potential population catchment of over 10,000 people.

- C.1.5 It is worth noting, however, that a significant proportion of the population that is within a 20 minute drive time and above is also within the same or less travel time of Lockerbie railway station. Thus the actual potential rail users could be lower due to this proximity to an existing station.

C.2 Public Transport Accessibility

- C.2.1 In order to highlight the comparative public transport accessibility of the study area, we have used the accessibility mapping software TRACC to graphically illustrate accessibility at different points of the day.
- C.2.2 TRACC software can be used to map the public transport accessibility of a settlement. It takes account of timetables in their entirety, including frequency, length of operating day and interchange times. However, it does not account for walk times to bus stops / railway stations or the quality / reliability of the services.
- C.2.3 Figure C.3 below illustrates how far it is possible to travel by public transport from Beattock in the AM Peak (0700-1000).

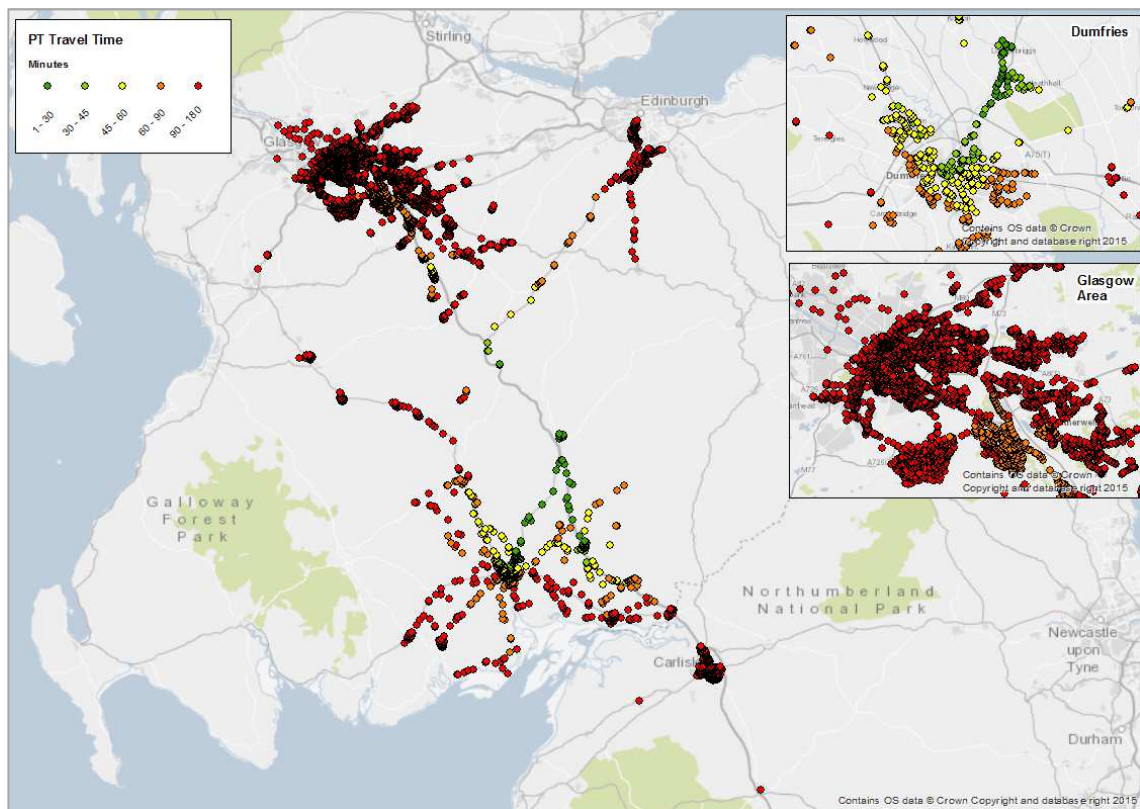


Figure C.3: Public Transport Accessibility - AM Peak

- C.2.4 As can be seen in Figure C.3, it is possible to travel to both Glasgow and Edinburgh in the north and Carlisle in the south within a three hour travel period by public transport. Dumfries can be reached within 45 minutes from Beattock. If only travel within an hour was used, accessibility would be restricted to mainly the local area along the M74 (M) corridor.
- C.2.5 Figure C.4 further illustrates public transport travel time from Beattock to a selected group of destinations in the AM Peak.

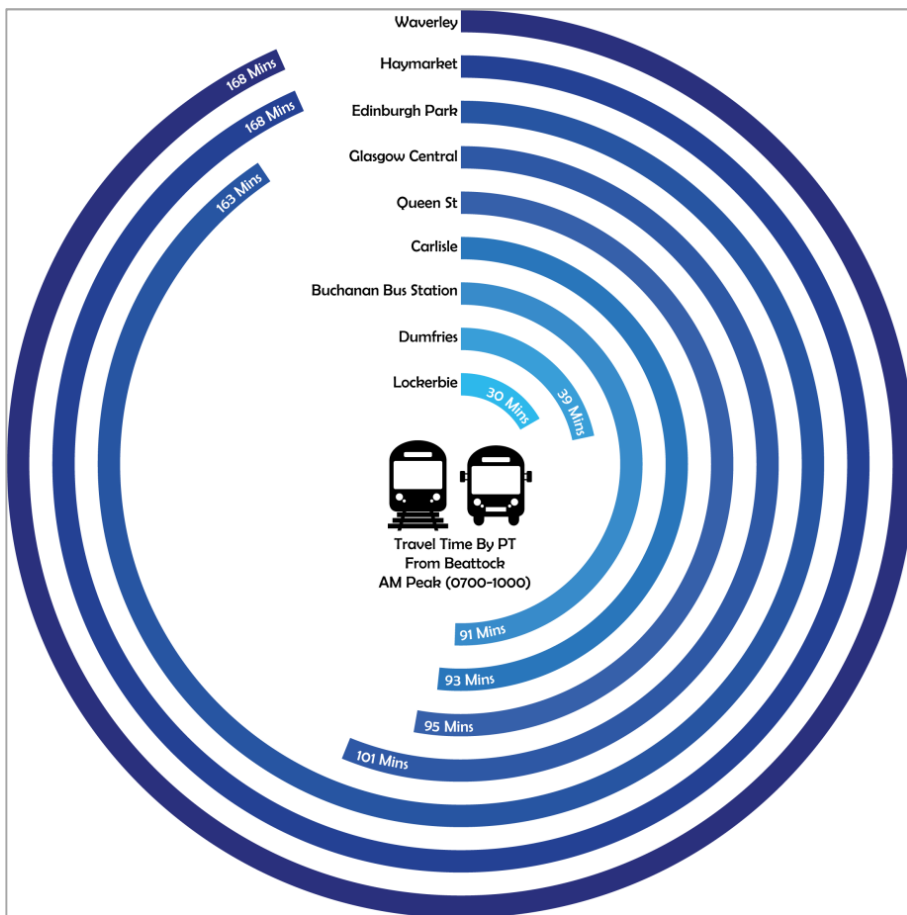


Figure C.4: Public Transport Accessibility From Beattock in the AM Peak

- C.2.6 In Figure C.4, for travel in the AM, travel time will take in excess of two hours to Edinburgh by Public Transport. This time will include travel from Beattock by bus and then interchange to rail, or continue on bus if this is the quickest method.
- C.2.7 Access to Glasgow is slightly better with travel times of around an hour and a half to Glasgow Queen St / Central or Buchanan Bus Station.
- C.2.8 In the local context both Dumfries and Lockerbie can be reached by public transport within 40 minutes.
- C.2.9 Figure C.5 shows how far people can travel using the current public transport services to Beattock in the PM Peak (1600-1900).

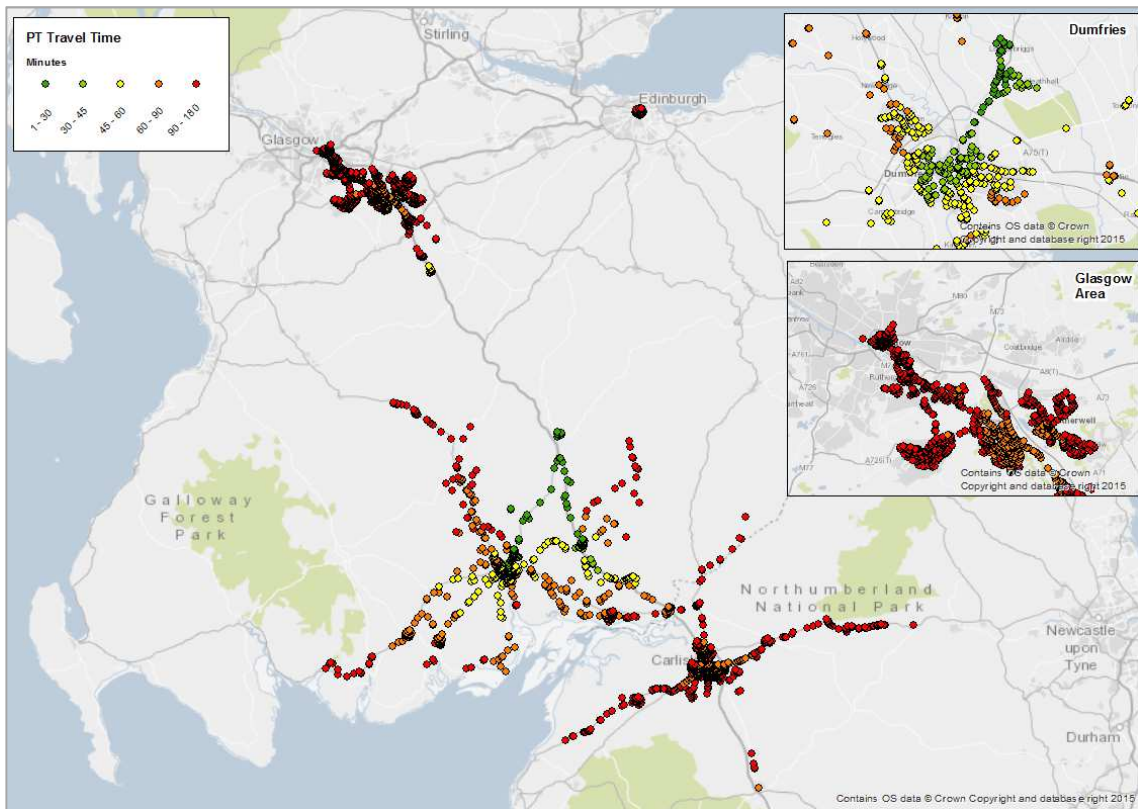


Figure C.5: Public Transport Accessibility - PM Peak

C.2.10 Figure C.5 shows the PM Peak presents a similar picture to that of the AM Peak, however, with less accessibility in and around the Glasgow and Edinburgh areas. Again within an hour's travel time, accessibility to Beattock is restricted to the very local area.

C.2.11 Figure C.6 shows accessibility to the study area in PM peak period.

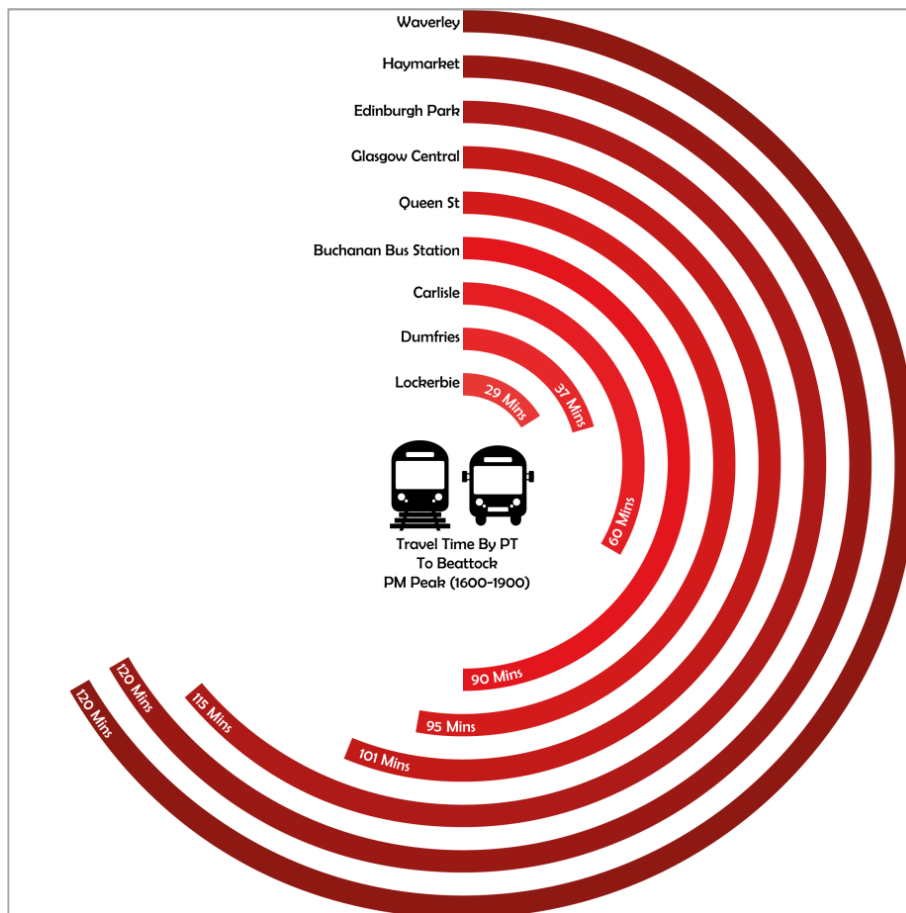


Figure C.6: Public Transport Accessibility To Beattock in the PM Peak

C.2.12 Figure C.6 clearly demonstrates that Beattock is better served in the PM peak than in the AM, with all travel times with the exception of the three Glasgow locations having quicker travel times.

C.2.13 Travel time from Edinburgh witnesses the biggest change with travel time reducing by over 40 minutes from the AM peak.

C.3 Public Transport vs. Private Car Travel Times

C.3.1 Table C.1 shows a comparison of approximate public transport travel times compared to that of the private car and shows, in most cases, the much longer public transport times compared to travel time by car. Note that the travel times are taken in uncongested conditions for the car and for public transport takes the fastest journey time possible over the entire day without any inclusion of walk or wait time at bus/rail stops at journey origin.

Table C.1: Approximate Public Transport vs. Private Car Journey Times

	Travel Time To (minutes)							
	Dumfries		Lockerbie		Edinburgh		Glasgow	
From	Car	Public Transport	Car	Public Transport	Car	Public Transport	Car	Public Transport
Beattock	30	40	20	37	90	115	60	95
Moffat	30	40	20	35	90	110	60	85

C.4 Access to Employment - Hansen Indicators

- C.4.1 An important consideration is access to the jobs market. Fast, frequent and reliable connectivity to employment is of considerable importance to the study area. Such accessibility can be modelled using what are known as ‘Hansen Indicators’, which provide a measure of accessibility from one datazone to all other datazones, weighted by the number of jobs in each. So, for example, accessibility to the datazones in Glasgow City Centre carries a considerably higher weight than accessibility to datazones in, for example, rural East Dunbartonshire.
- C.4.2 In developing the Hansen Indicators for the study area, we have measured accessibility from the settlement to all datazones within the Dumfries and Galloway local authority boundary.
- C.4.3 Figure C.7 shows the Hansen related accessibility indicators for the Beattock, Moffat study area with the areas in dark red having the poorest accessibility to the jobs, progressively improving through to the green areas, which have the best accessibility

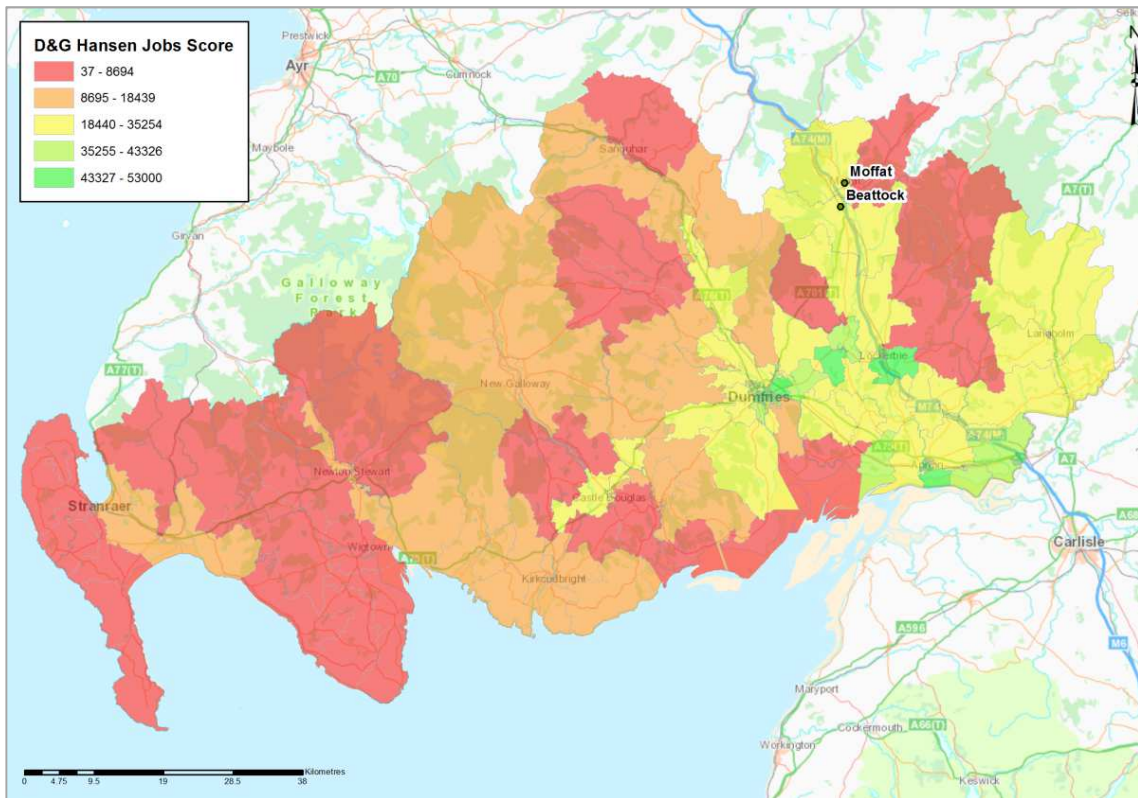


Figure C.7: Beattock / Moffat Study Area – Hansen Indicators

- C.4.4 As can be seen in Figure C.7, the study area generally sits within the mid-level category for access to jobs, lagging behind areas such as Lockerbie and Gretna. It is highly likely that both these towns benefit from having access to a local railway station.
- C.4.5 Overall, it is reasonable to hypothesise that due to having a good bus service and being within close proximity of the M74 (M) corridor helps maintain the study area within the mid-level, however, a lack of better services may be constraining the study area from enhancing its economic profile.

Appendix D Socio-Economic Data Analysis

- D.1.1 To support the identification of problems and opportunities, and recognising that transport is a critical enabler of economic development and regeneration, a key step in the process of identifying problems and opportunities was to review the socio-economic profile of Beattock and Moffat. The review considered the socio-economic profile of the study area considering key issues such as population, the labour market, deprivation and property.
- D.1.2 The guidance is clear that the resource invested in STAG appraisals should be proportionate to the size of the study area and schemes in question. The analysis undertaken has been based on a review of the relevant secondary data sources and attempts to draw out the main points of relevance rather than provide an exhaustive review of every area. The data for Beattock and Moffat is set against the local authority and national averages. In addition, for comparison purposes, data is also provided for Lockerbie, the closest town to Beattock and Moffat with an existing railway station.

Data Geography

- D.1.3 Due to the need to provide complete anonymity when reporting socio-economic data, the various datasets used in this chapter are only made available at specific geographic levels, as shown in Figure D.1.

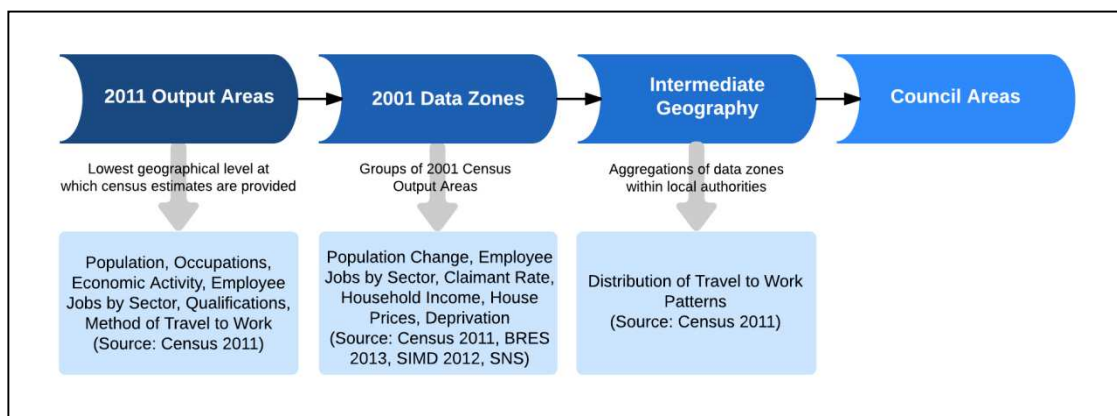


Figure D.1: Data Used for Analysis by Different Geographic Levels

- D.1.4 Figure D.2, Figure D.3, and Figure D.4 show the geographic area covered by each of the above geographic levels for both the study area and Lockerbie. As shown, while the output area and datazone level boundaries are comparable, the intermediate zone level (the lowest level at which origin destination travel to work data is available), covers a much larger area.

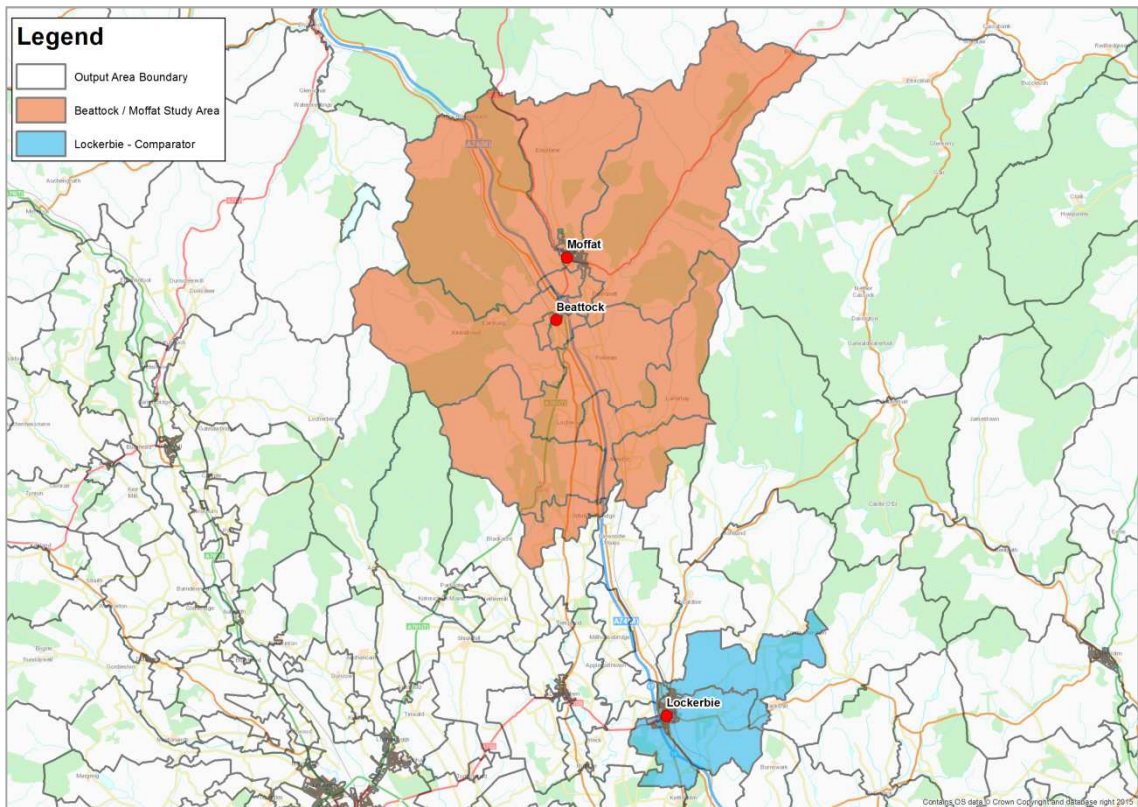


Figure D.2: Study Area and Lockerbie Output Area Boundaries

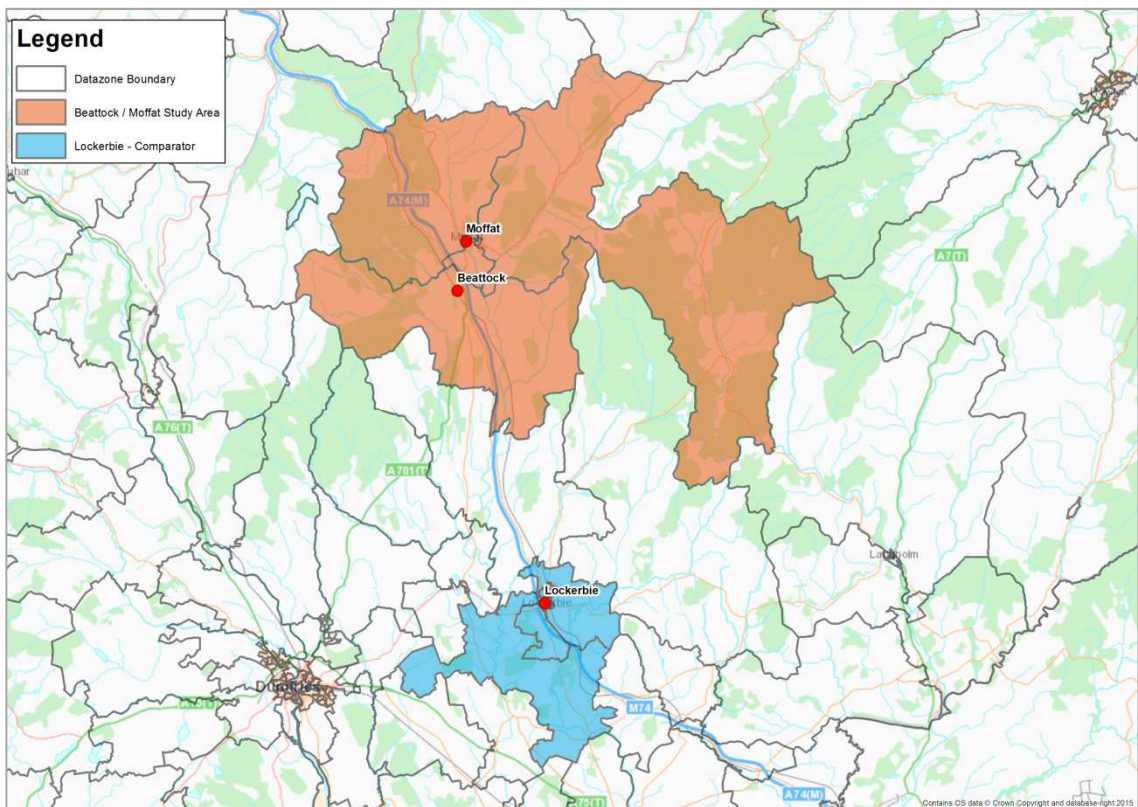


Figure D.3: Study Area and Lockerbie Datazone Boundaries

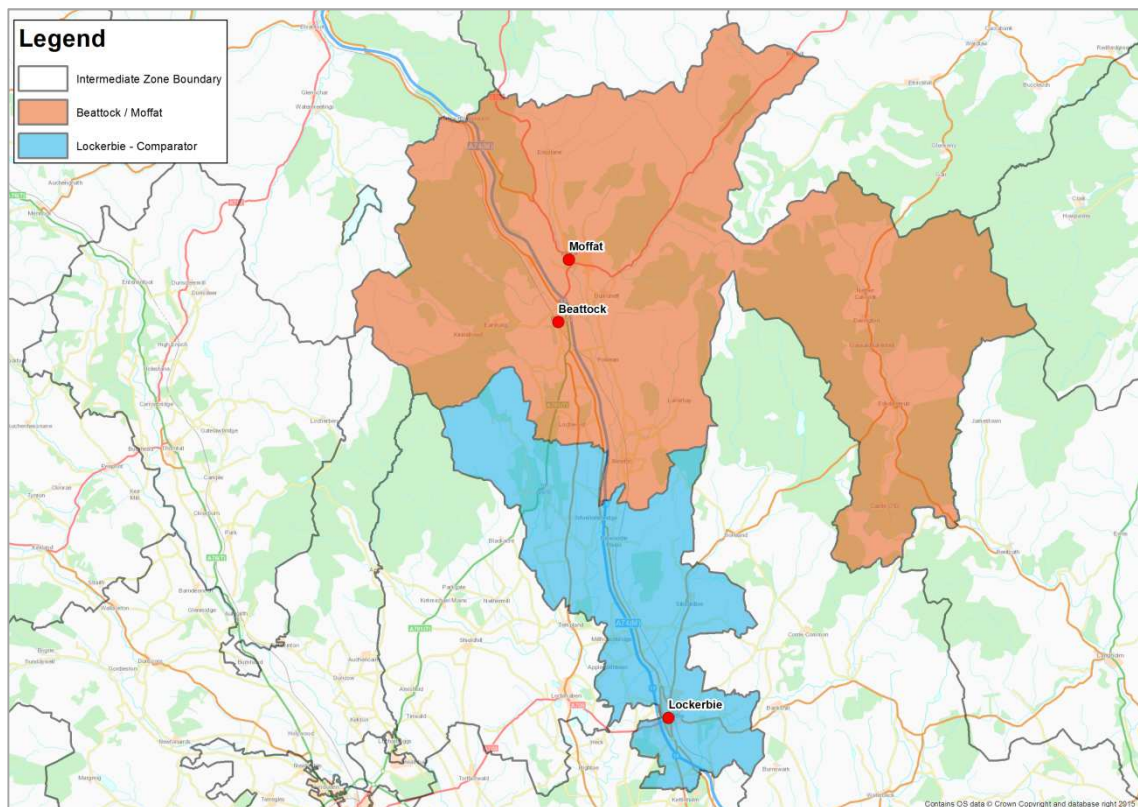


Figure D.4: Study Area and Lockerbie Intermediate Zone Boundaries

D.2 Population

D.2.1 The trend in population is often seen as a barometer of the economic health and attractiveness of an area. Areas with a stable or growing working age population are often seen to be in better economic health than those with a declining and / or ageing populace.

Overall Population

D.2.2 The population of the Beattock, Moffat study area is 4,500⁸, according to the 2011 Census, which represents 2.8% of the total population of the Dumfries and Galloway local authority area.

D.2.3 Population has increased by 3% in the study area between 2002 and 2013 according to mid-year population estimates, compared to a 2% increase in Dumfries and Galloway and 5% in Scotland. It is significant that the rate of population growth for the study area has exceeded the local authority average. This suggests that the area is becoming an increasingly attractive place in which to live. This is further evidenced when compared to a similar size settlement such as Lockerbie which has a growth rate similar to the regional average of 2%.

Population Age Structure

D.2.4 Figure D.5 illustrates the age structure of the Beattock, Moffat study area as in 2011. The figure shows that the study area population is in line with the local authority and national population, although the Dumfries and Galloway region as a whole does have a higher proportion of over 65s. Compared against Lockerbie, the study area has a very similar profile trend.

⁸ Population figure is based upon 2011 Census Output Area Level data broadly corresponding to the study area as defined in Figure 1.1.

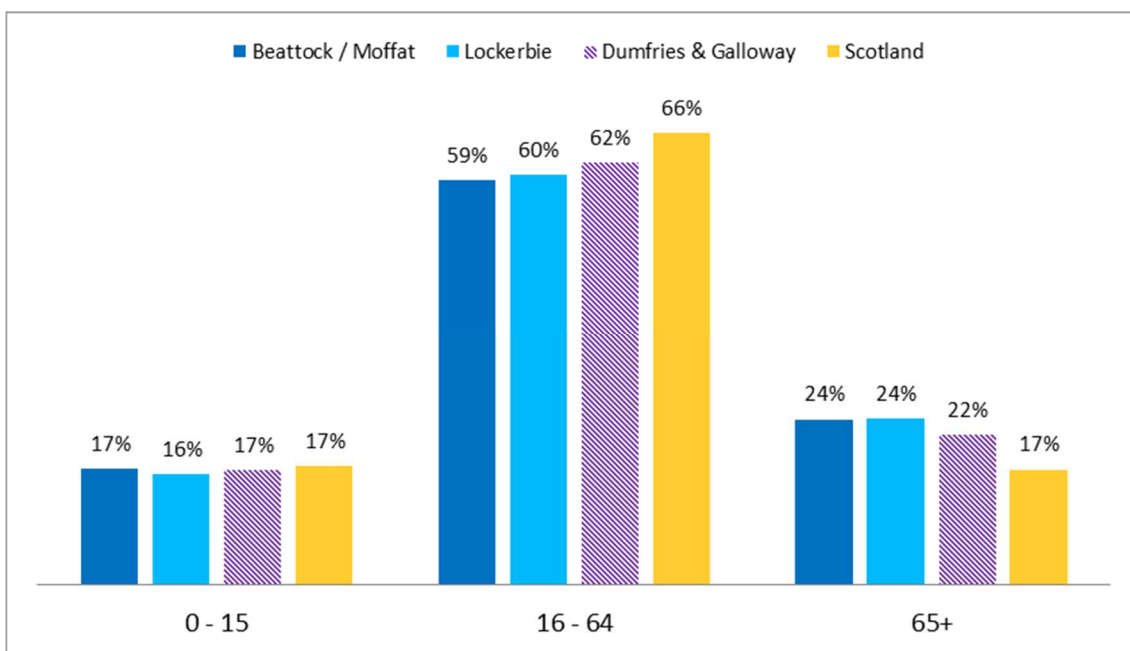


Figure D.5: Population Age Profile (Source: 2011 Census)

D.2.5 On the whole, the study area appears to have a relatively favourable demographic balance, however, the number of those between 16-20 that make up the working age population is under 15%, 2% lower than the regional average, which suggests that many may move away from the area to study in further education. Furthermore, as the working age population is slightly lower than both the regional and national averages, the figures may suggest that there may be difficulties in attracting these people back to the area.

Key Points

The Beattock, Moffat study area has experienced an increase in population in recent years, greater than Lockerbie and the local authority average. This suggests a growing confidence in the area as a place to live.

The study area also has a relatively favourable demographic mix, with a higher proportion of people under 64 than the local authority and Scottish average.

D.3 Labour Market

Occupations

D.3.1 Table D.2 shows the range of occupations of residents aged 16 to 74 in employment in the study area against that of residents in Lockerbie, Dumfries and Galloway and Scotland. It is useful to compare occupations across different locations as the occupations often reflect the range of skills in those locations. For instance, residents employed within the occupational categories of managers, and senior officials, professional occupations and associate professional and technical occupations are typically highly skilled and well-paid, whereas those employed within the occupational categories of elementary occupations and process, plant and machine operatives typically possess a lower skill level and receive lower wages.

Table D.2: Occupation Categories (Source: 2011 Census)

Occupation	Study Area	Lockerbie	Dumfries and Galloway	Scotland
Managers, directors and senior officials	13%	8%	8%	8%
Professional occupations	14%	11%	13%	17%
Associate professional and technical occupations	8%	7%	9%	13%
Administrative and secretarial occupations	8%	10%	10%	11%
Skilled trades occupations	18%	17%	17%	13%
Caring, leisure and other service	9%	1%	11%	10%
Sales and customer service occupations	7%	9%	8%	9%
Process, plant and machine operatives	8%	13%	10%	8%
Elementary occupations	14%	15%	13%	12%

- D.3.2 Table D.2 shows that at the time of the 2011 Census, the largest category of occupation in the study area was 'Skilled trades occupations', employing 18% of all employed people aged 16 to 74 (compared to the local authority and national averages of 17% and 13%). The study area also has a marginally higher concentration in 'Elementary occupations' than the Dumfries and Galloway and Scottish averages.
- D.3.3 In contrast, Lockerbie has a significantly higher concentration of employees in the lower value categories such as 'Process, plant and machine operatives' compared to the study area (8%), local authority (10%) and national averages (8%). The study area is, however, similar to Lockerbie in relation to having a larger concentration of employees in 'Elementary occupations' than the local and national trends.
- D.3.4 A key question which this study will explore is the extent to which transport connectivity in the study area is in some way constraining access to higher value employment. In addition, it will also be important to explore whether connectivity is a significant factor in encouraging out-migration / deterring in-migration of the more highly skilled cohorts.

Key Point

Resident employment in the study area is typically weighted towards either 'Skilled trades' or 'Elementary occupations' and 'Professional occupations'.

Economic Activity

- D.3.5 The economic activity rate is a critical indicator of the economic wellbeing of an area. The economically active are those defined as in work or actively looking for work, whilst the economically inactive are defined as those neither in work nor seeking employment (e.g. retirees, students, long-term sick, unpaid carers etc.). The usual measure of economic activity is based on the working age population (16-64) but the Census uses 16-74.
- D.3.6 Of the 3,079 people in the study area aged between 16 and 74, 66.9% were economically active (either in or looking for work) compared to 67.9% in Lockerbie, 67.7% in Dumfries and Galloway and 69% in Scotland (Census 2011).

D.3.7 Figure D.6 shows the breakdown of usual residents aged 16 to 74 in the study area by economic status. The largest category is residents in employment (part-time and full-time employees or self-employed) which represent 61%, a trend very much on par with Lockerbie and the regional and national figures. On the other end of the spectrum the proportional of those that are retired is higher than all other areas.

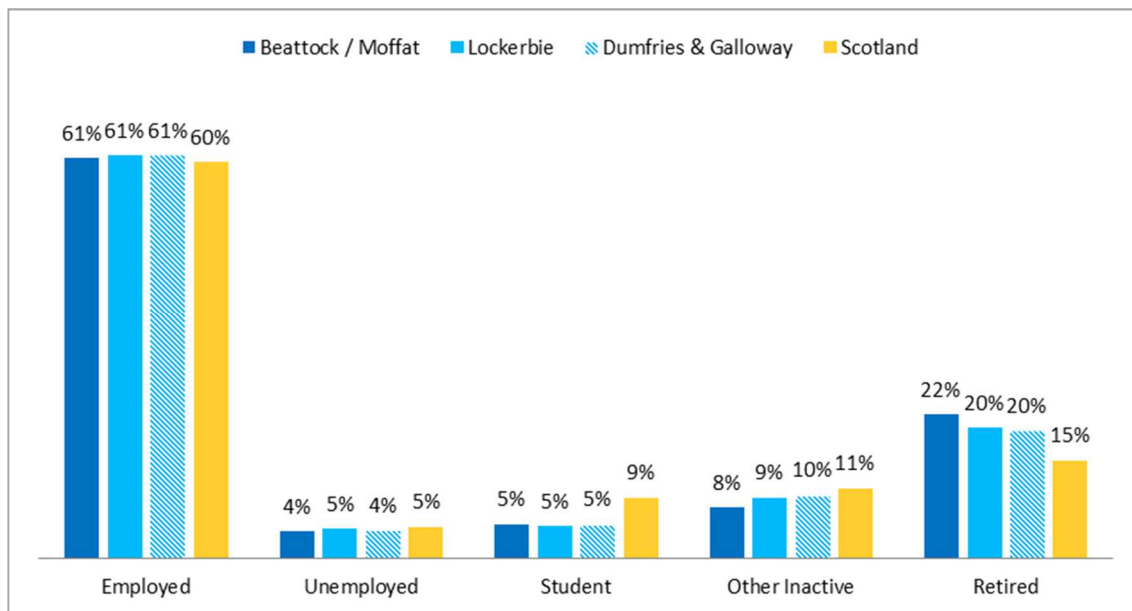


Figure D.6: Economic Status (Source: Census 2011)

Key Point

The study area performs below the local, regional and national levels in terms of the economic activity rate of its population. The area also contains a higher share of retired people as a make-up of the population.

Claimant Rate

D.3.8 The claimant rate records the percentage of people aged 16 to 64 claiming key benefits⁹. This indicator is often used as a proxy measure to identify those on low incomes. Transport improvements can have an impact on the region’s accessibility and increase opportunities for the workforce which could eventually lead to a decline in the number of benefit claimants. Approximately 11.2% of the working age population in the study area received key benefits in 2012 according to Scottish Neighbourhood Statistics data, as opposed to 14.8% in Lockerbie, 15.9% in Dumfries and Galloway and 16.3% in Scotland.

D.3.9 The claimant rate expressed as the ratio between the number of claimants of Job Seekers Allowance and the number of people aged 16 to 64 is a measure of unemployment within a location. It is worth noting though that the figure for total unemployment tends to be underestimated as JSA only counts those people who do not work and claim unemployment benefit, leaving out the unemployed who do not claim benefits. In the study area the percentage of the working age population in receipt of JSA is 2.3%, which is 1.4% lower than Lockerbie, 1.4% lower than the Dumfries and Galloway rate and 1.6% lower than the Scottish average.

⁹ Job Seekers Allowance; Employment Support Allowance or Incapacity Benefit or Severe Disablement Allowance; Lone Parents Income support; Carers Allowance; Income Related Benefit or other income support (including IS Disability premium) or Pension Credit; Disabled Disability Living Allowance (DLA); Bereaved Widows Benefit, Bereavement Benefit or Industrial Death Benefit claimants.

Key Point

The claimant rate for the study area in terms of both key benefits and JSA are significantly lower than the local, regional and national rates.

Employee Jobs by Sector

D.3.10 The table below identifies approximate employee numbers by industry across the study area. It makes use of two different measures of employment, as follows:

- **Resident Employment** – this measure considers the industry in which the settlements' residents are employed and is based on the 2011 Census.
- **Workplace Employment** – this measure considers the employment by industry of those who work in the settlements, irrespective of whether they are residents or otherwise.

D.3.11 Due to the thresholds required to maintain anonymity in the BRES data, some numbers in Table D.3 may be left blank as they fall below the minimum numbers required.

Table D.3: Resident and Workplace Employee Numbers by Sector (Source: Census 2011 and BRES 2013)

Industry	Employee numbers (Residents analysis 2011)	Employee numbers ¹⁰ (Workplace analysis 2013)
Agriculture, forestry and fishing	159	-
Mining, Manufacturing and Utilities	180	100
Construction	205	100
Wholesale and retail trade; repair of motor vehicles and motorcycles	298	200
Transportation and storage	89	-
Accommodation and food service	214	200
IT, finance and real estate	80	-
Professional, scientific and technical activities	70	-
Administration and defence	157	100
Education	134	100
Human health and social work activities	271	200
Other	73	-
TOTAL	1,930	1,000

¹⁰ Employee values were rounded to the nearest 100 as required by the licence for using BRES. Therefore, figures of less than 50 do not appear.

- D.3.12 The largest sector in terms of resident employment is 'Wholesale & Trade; Repair of Motor Vehicles & Motorcycles', which accounts for 298 employees, or 15.4% of the population aged 16 to 74 in employment. The public sector also accounts for a large share of resident employment, with 'Administration & Defence', 'Education' and 'Human Health and Social Work Activities' accounting for a combined third of employment.
- D.3.13 There are also hints towards the importance of tourism in the area, with 'Accommodation and food service activities' accounting for 11.1% of employment.
- D.3.14 In terms of workplace employment, again the public sector dominates, with a significant number of workplace jobs in the study area concentrated in 'Human health and social work activities'. The rest is mainly covered by the 'Wholesale & Trade; Repair of Motor Vehicles & Motorcycles' sector and the tourist sector 'Accommodation and food service'.
- D.3.15 Figure D.7 compares the proportion of resident employees by sector in the study area to Lockerbie, Dumfries and Galloway and Scotland.

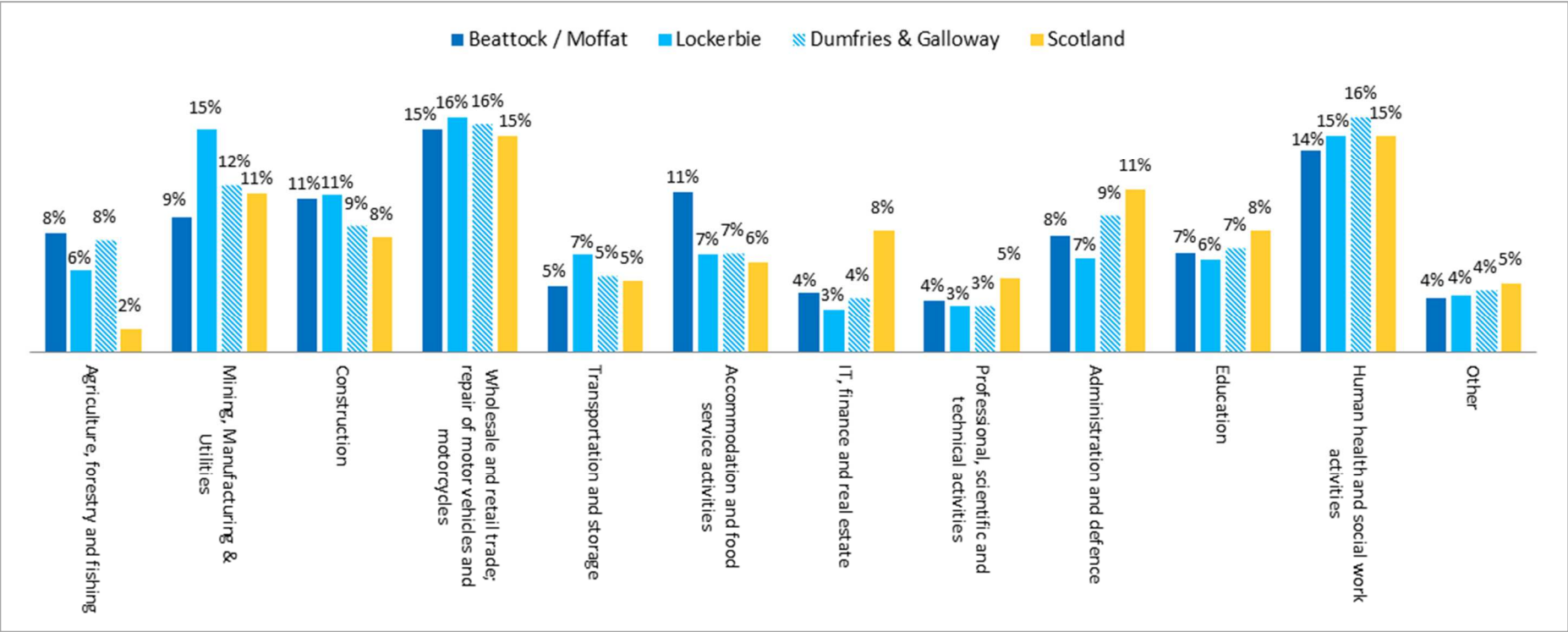


Figure D.7: Proportion of Resident Employees by Sector (Source: Census 2011)

D.3.16 The key points from Figure D.7 are:

- There is a considerably higher concentration of employees in Accommodation and food service activities in the study area when compared to the local, regional and national levels;
- The study area has a lower concentration of employees in Mining, Manufacturing and Utilities, than the local, regional and national figures;
- The study area follows a similar trend for employees by sector across the majority of sectors.

Key Points

A third of residents in the study area are employed in the public sector, while the majority of jobs within the study area are in accommodation and food services and wholesale and retail.

Tourism

Attractions

- D.3.17 Beattock and Moffat are particularly popular locations for tourism in south central Scotland. Moffat is a Conservation Area and falls within the Moffat Hills Regional Scenic Area. It has well established links with tourism, originally as a spa town but more recently in terms of walking and toffee.
- D.3.18 A recent study has found that the number of people visiting the visitor centre in Moffat reached around 300,000 in 2014, with trends showing increases over the years. Moffat is only one of a few settlements where this is the case throughout Dumfries and Galloway.
- D.3.19 One of the main attractions in the area is the number of recreational walks. Moffat was Scotland's first *Walkers are Welcome* town offering a variety of waymarked walking routes for all abilities, including three well known walks, Southern Upland Way, Annandale Way and Sir Walter Scott Way.
- D.3.20 The largest and most popular of these walks is the southern Upland Way. The walk covers a distance of 212 miles from Portpatrick in Galloway to Cockburnspath in the Scottish Borders. It is Scotland's longest official Long Distance Recreational Route, attracting around 1,000 end to end walkers a year contributing some £500k to the local economy. Additionally, the walk also attracts around 53,000 short route users per year.
- D.3.21 As can be seen tourism plays an important role in the region and the local economy, however, without adequate public transport access, it may prove difficult to increase these numbers and tourism spend to help develop the local economy.

Residents

Qualifications

- D.3.22 The level of qualifications held by the population of an area is seen to be an indicator of economic performance. Areas with a high proportion of well qualified people tend to perform comparatively better (in terms of occupational classification, average wages etc.) than areas characterised by low educational attainment.

D.3.23 Figure D.8 below shows the highest level of qualification¹¹ attained by the population in the study area.

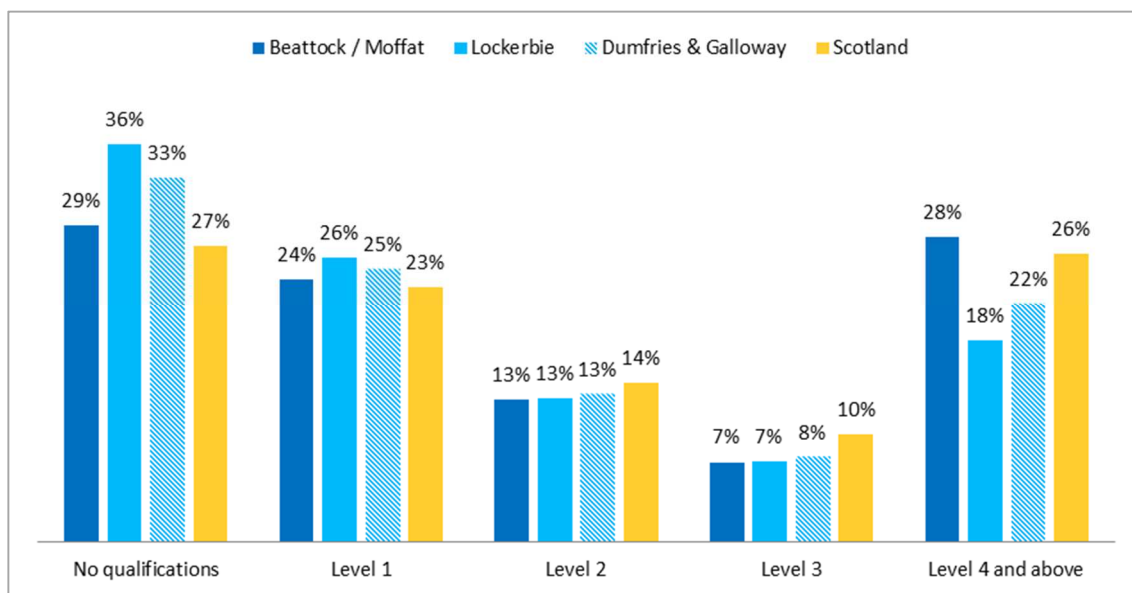


Figure D.8: Highest Level of Qualification (Source: Census 2011)

D.3.24 Figure D.8 demonstrates that the study area performs comparably with both the regional and national levels of educational attainment. Of the total number of residents aged 16 and over in the study area, 29% hold no qualification, which is marginally lower than the local average and 2% in excess of the national average.

D.3.25 The study area does, however, perform 'on par' with the local average in the highest category qualifications (Level 4 and above), with the percentage of residents with such qualifications 5% less than the national average. Moffat, however, performs highly against the local and national averages, 8% and 4% higher, respectively.

D.3.26 Whilst there are likely to be a plethora of reasons for varying attainment levels, a useful angle for this study to explore is the extent to which poor connectivity to colleges / universities is making people leave home when studying. Also of interest is whether residents who do obtain

¹¹ The dataset is split across four levels as follows:

- Level 1: 0 Grade, Standard Grade, Access 3 Cluster, Intermediate 1 or 2, GCSE, CSE, Senior Certification or equivalent; GSVQ Foundation or Intermediate, SVQ level 1 or 2, SCOTVEC Module, City and Guilds Craft or equivalent; Other school qualifications not already mentioned (including foreign qualifications);
- Level 2: SCE Higher Grade, Higher, Advanced Higher, CSYS, A Level, AS Level, Advanced Senior Certificate or equivalent; GSVQ Advanced, SVQ level 3, ONC, OND, SCOTVEC National Diploma, City and Guilds Advanced Craft or equivalent;
- Level 3: HNC, HND, SVQ level 4 or equivalent; Other post-school but pre-Higher Education qualifications not already mentioned (including foreign qualifications);and
- Level 4 and above: Degree, Postgraduate qualifications, Masters, PhD, SVQ level 5 or equivalent; Professional qualifications (for example, teaching, nursing, accountancy); Other Higher Education qualifications not already mentioned (including foreign qualifications).

a high level qualification move out of Beattock and Moffat and, if this is the case, why they choose to do so.

Key Point

Beattock performs comparably with both the local and national averages across the spectrum of attainment levels. Moffat performs slightly better, with a higher attainment level at level 4 compared to the local and national averages.

Household Income

- D.3.27 Household income is a further barometer of the economic wellbeing of an area. The median household weekly income in Beattock was £360 in 2008-09, 1% higher than the Dumfries and Galloway household income and 7.6% lower than the average national household income. Moffat performs slightly better than Beattock with the median household weekly income of £373 in 2008-09. This figure is 4.8% higher than the Dumfries and Galloway household income and still 4.1% lower than the average national household income.

Key Point

Average income in Beattock and Moffat is higher than the local average but both lag behind the national average, which is in keeping with the data on resident employment, qualifications etc.

House Prices

- D.3.28 The price of property reflects the balance between the demand to live in an area and the supply of different types of property. Areas with lower than average house prices are generally seen as less 'in-demand' than those with higher average house prices (which in turn affects development viability). Transport connectivity is one of a number of factors which impact on house prices (although obtaining an empirical estimation of the extent of this influence has always been challenging).
- D.3.29 In 2013, the mean house price in Beattock was £135,188 which was 1% higher than the average house price in Dumfries and Galloway and 14% lower than the average price of houses in Scotland. Moffat on the other hand had a mean house price of £160,292 which was 20% higher than the Dumfries and Galloway house price and 2% higher than the average house price in Scotland.

Key Point

House prices in Beattock are marginally higher than the regional average but lags behind the national average. Moffat on the other hand performs significantly better than both the regional and national averages.

Deprivation

- D.3.30 The Scottish Government regularly produces the Scottish Indices of Multiple Deprivation (SIMD), which "identifies small area concentrations of multiple deprivation across all of Scotland in a fair way. It allows effective targeting of policies and funding where the aim is to wholly or partly tackle or take account of area concentrations of multiple deprivation". SIMD combines 38 indicators across 7 domains, namely: income, employment, health, education, skills and training, housing, geographic access and crime. SIMD is essentially a social tool (i.e. it measures the performance of 'society') and it can act as detailed statistical barometer of the social performance / social capital in a given area.

D.3.31 The generally accepted point at which an area is defined as deprived is when it is classified in the '20% most deprived'. Figure D.9 shows the levels of deprivation within Beattock, Moffat and the surrounding area in 2012 by percentile.

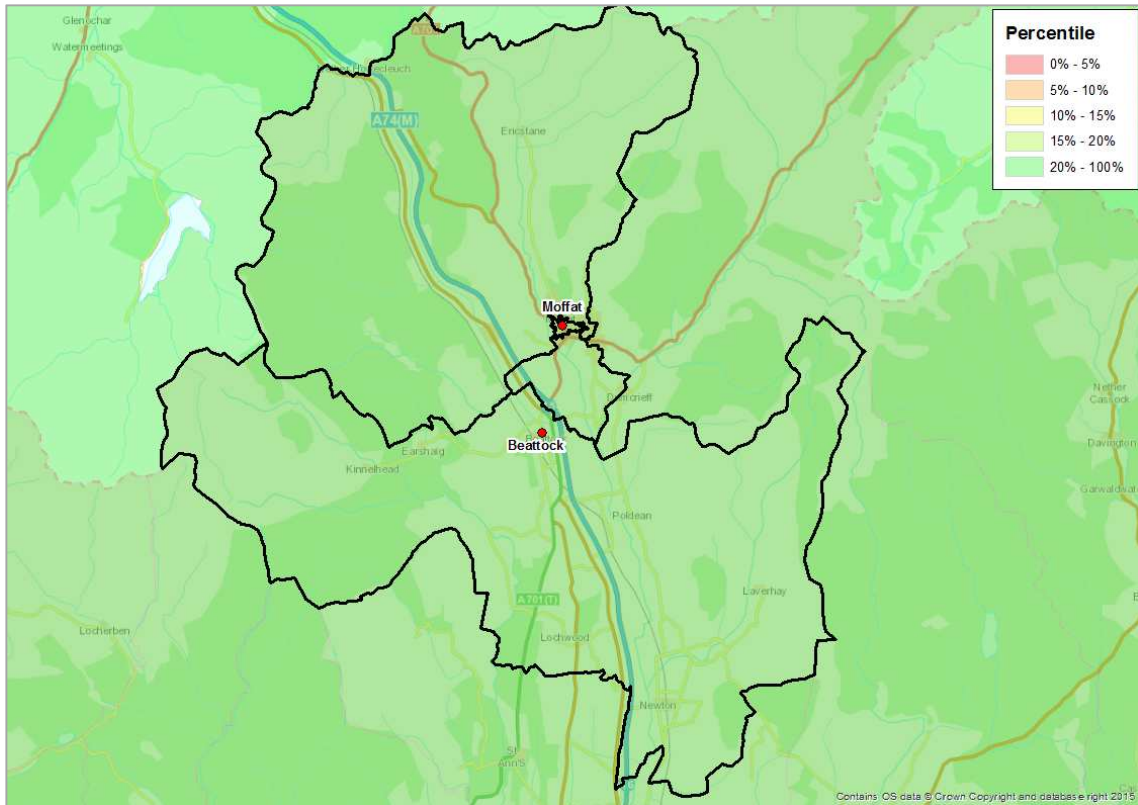


Figure D.9: Deprivation by percentile (Source: SIMD 2012)

D.3.32 It is notable from the above map that all four datazones that cover Beattock and Moffat are not included within the 20% most deprived. In fact all four zones rank in the 46% percentile and above.

D.3.33 Figure D.10 shows the change in deprivation in Beattock and Moffat between 2006 and 2012 as the change in percentiles for the different Data Zones. The levels of deprivation have increased over time as each of the four Data Zones witness a decline in overall SIMD percentile, with the specific Beattock and Moffat zones decreasing by 3 and 5 percentile points each respectively.

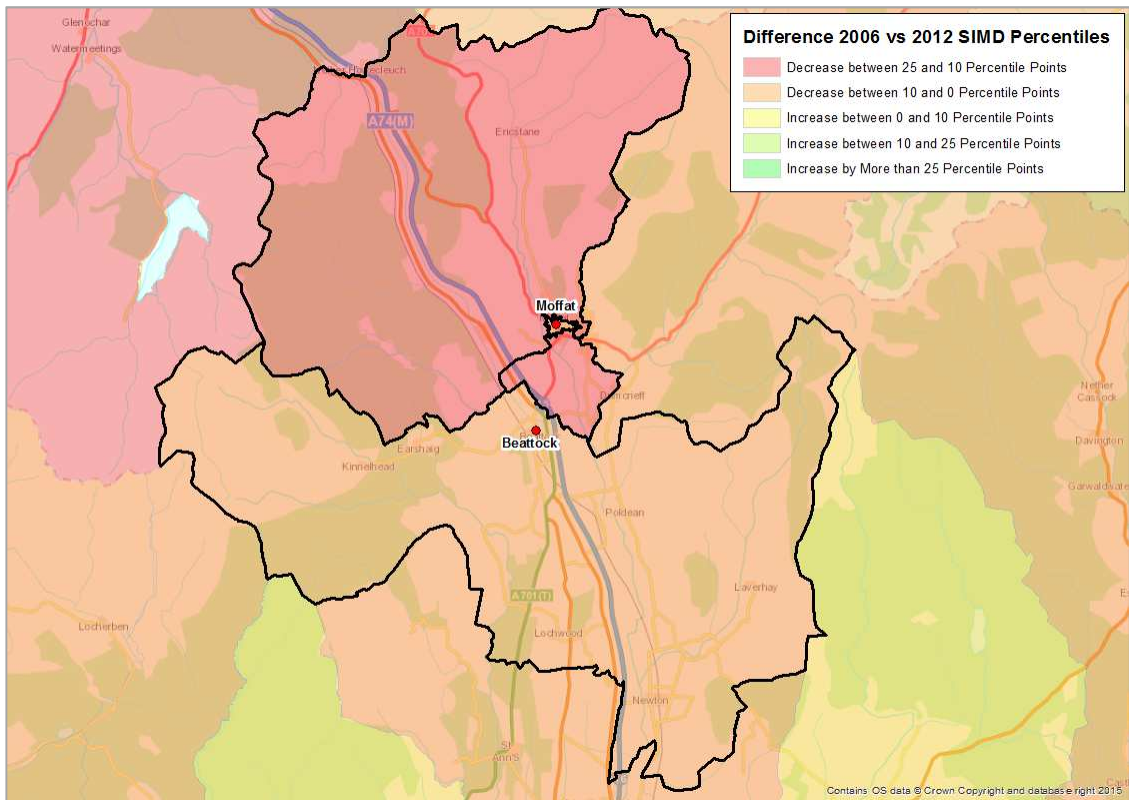


Figure D.10: Change in Deprivation between 2006 and 2012 (Source: SIMD 2006 and SIMD 2012)

Key Point

Beattock and Moffat have a significantly low level of deprivation with each of the data zones in the top half of the least deprived areas in Scotland. Over time, however, the ranking of each of the zones has decreased and the extent to which poor transport connectivity contributes towards such a trend will be explored through this study.

D.4 Housing and Employment Development

- D.4.1 Table D.4 outlines the Local Development Plan (LDP) allocations and the Housing Land Audit (HLA) indicative build out rates for the Beattock study area.

Table D.4: Local Development Plan Allocation and Housing Land Audit Indicative Phasing

Location	Site	LDP Allocation up to 2024 (units)	LDP Allocation beyond 2024 (units)	Remaining Capacity at 31 st March 2015	Completions 2015 - 2024	Completions									
						2015 - 16	2016 - 17	2017 - 18	2018 - 19	2019 - 20	2020 - 21	2021 - 22	2022 - 23	2023 - 24	Post 2024
Moffat	Dickson's Well	6	6	6	6	0	2	2	2	0	0	0	0	0	0
	Greenacres	15	15	15	15	0	3	3	3	3	0	0	0	0	0
	Old Carlisle Road	34	34	34	34	0	5	5	5	5	5	5	4	0	0
	Selkirk Road	200	0	200	70	10	10	10	10	10	10	10	10	10	130
	Former Academy	10 plus flexible business units	0	10	10	0	0	0	5	5	0	0	0	0	0
	Former Woollen Mill	Retail & tourist	0	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	Fellside, Old Carlisle Road	n/a	n/a	1	1	1	0	0	0	0	0	0	0	0	0
	Old Carlisle Road	n/a	n/a	4	4	1	1	1	1	0	0	0	0	0	0
Johnstonebridge	North of MacLean Drive	39	0	39	39	0	0	0	0	10	10	10	9	0	0
	Land west of primary school	90	0	90	80	0	10	10	10	10	10	10	10	10	10
Total		394	399	259	12	31	31	36	43	35	35	33	20	140	

Key Point

There are significant housing allocations within the Beattock and Moffat study area. Should these sites be built out, there would be an increase in population and transport demand within the local area.

- D.4.2 There is a further 20ha of employment land allocated in the LDP at Hangingshaws, Johnstonebridge.

Appendix E Policy Overview

Level	Policy, Plan or Strategy	Purpose	Objectives
National	National Transport Strategy (Transport Scotland, 2016)	To act as an enabler of economic growth – to support businesses in achieving their local, national and international objectives and to improve the lives of individuals and communities by connecting them with their economic future.	<ul style="list-style-type: none"> • Improved journey times and connections, to tackle congestion and lack of integration and connections in transport; • Reduced emissions, to tackle climate change, air quality, health improvement; • Improved quality, accessibility and affordability, to give choice of public transport, better quality services and value for money, or alternative to car; • Promote economic growth by building, enhancing managing and maintaining transport services, infrastructure and networks to maximise their efficiency; • Promote social inclusion by connecting remote and disadvantaged communities and increasing the accessibility of the transport network; • Protect our environment and improve health by building and investing in public transport and other types of efficient and sustainable transport which minimise emissions and consumption of resources and energy; • Improve safety of journeys by reducing accidents and enhancing the personal safety of pedestrians, drivers, passengers and staff; and • Improve integration by making journey planning and ticketing easier and working to ensure smooth connection between different forms of transport.
	Scotland's Railways (Transport Scotland, 2006)	The document sets out Transport Scotland's plan over the next 20 years for potential intervention over the short, medium and longer term to ensure that Scotland's railway network continues to improve.	<p>Objectives for Anglo-Scottish Routes:</p> <ul style="list-style-type: none"> • Capacity enhancements on the Glasgow and South Western route to assist freight movements. <p>Objectives for Rural Routes:</p> <ul style="list-style-type: none"> • Revise train services in the light of changing travel patterns and markets including tourism developments. • Take advantage of synergies with upgrade of Glasgow and South Western (GSW) route to improve passenger service journey times to Carlisle. <p>It is noted that promoting social inclusion is a driver in these areas as is economic growth through tourism.</p>

Level	Policy, Plan or Strategy	Purpose	Objectives
	National Planning Framework 3 (Scottish Government, 2014)	The NPF3 sets out the long-term vision for the spatial development of Scotland and is the spatial expression of the Government Economic Strategy.	<p>Dumfries recognised as a gateway town. <i>"Dumfries is the regional capital of the south west of Scotland. Demonstrating the potential of rural towns to make a unique and significant contribution to the national spatial strategy, regeneration of the Crichton Quarter and the Learning Town initiative are providing opportunities for local learning, skills development and innovation, including in carbon management and rural development. Tourism, food and drink and primary industries will continue to be important for Dumfries. A new hospital will be developed, strengthening the role of Dumfries as an important service centre. The Solway has significant opportunities for marine renewable energy generation, which could help to further diversify the local economy over the long-term. Wider opportunities for economic growth are also likely to be located along the A74 corridor. The area has a close relationship with Carlisle, and connections, including by rail and via the A77 and A75, will continue to be important locally and for longer distance links to Ireland, England and Europe."</i></p> <p><i>"Stranraer and Cairnryan are Scotland's gateway to Northern Ireland. Since relocation of the ferry terminal from the centre of Stranraer, regeneration plans for the waterfront have become of critical importance to the town and wider region.</i></p> <p><i>It is important that the momentum gained from designating Port Facilities at Loch Ryan as a national development in NPF2 is not lost – following opening of the new facilities in 2011, targeted interventions are being made to improve the A77 and A75 and a new electric bus service is providing a low carbon transport link from the new port facilities to the town centre. The A75 is a Euroroute, providing a vital link from Northern Ireland across the region to the rest of Scotland, England and Europe."</i></p>
Regional	Regional Transport Strategy (SWestrans, 2008)	The purpose of this Strategy is to determine and deliver better transport solutions, both regionally and nationally, and to	<p>To deliver genuine travel choices and improve connectivity internally between key locations and communities, and externally to Glasgow, Edinburgh, England and Northern Ireland. It is about providing access to jobs and public services, enabling goods to reach their markets and providing the links that promote social inclusion and support quality of life.</p> <p>The strategy vision is <i>"a transport system for the south West of Scotland that delivers the internal and external connectivity required to sustain and enhance the region's economy and communities whilst minimising the impact of transport on the environment."</i></p>

Level	Policy, Plan or Strategy	Purpose	Objectives
		act as a catalyst for regeneration of the region's economy.	<p>Objectives:</p> <ul style="list-style-type: none"> • Improve transport links within Dumfries and Galloway and provide fast, safe and reliable journey opportunities to significant markets, including the national economic centres of Edinburgh and Glasgow, as well as England and Northern Ireland; • Contribute to improved economic growth and social inclusion in the region whilst minimising the environmental impacts of transport; • Support the national transport target of road traffic stabilisation; • Add value to the broader Scottish economy and underpin increased sustainable national economic growth; • Assist in getting visitors/tourists to the region from other parts of Scotland, England, Ireland and beyond; • Making it possible for more people to do business in and from Dumfries and Galloway by providing sustainable connections to key business centres in the Central Belt and other locations such as Ayrshire and Cumbria; • Support vibrant places that provide employment, healthcare, educational and other services that people need and want, so that their quality of life is maximised; • Reduce the constraint of peripherality, both between the region's main settlements and its outlying areas, and between the region and its external markets; • Capitalise on improvements to critical long distance corridors to create new transport services, nodes and development opportunities for Dumfries and Galloway; • Pursue certain transport schemes in the context of local and national economic development, while at the same time recognising wider context of economic, social and environmental imperatives.
	Regional Economic Strategy (2015 - 2020)	The RES was developed to ensure that the strategic economic priorities for the region are clearly	<p>The vision for the strategy is "<i>By 2020, Dumfries and Galloway will have a more diverse and resilient economy. One which is capable of taking advantage of opportunities by combining an appropriately skilled workforce and connected infrastructure to support more prosperous and inclusive communities where every member of every community has equality of access to that prosperity</i>".</p> <p><i>The document includes six strategic objectives. Those of particular relevance are as follows:</i></p>

Level	Policy, Plan or Strategy	Purpose	Objectives
		<p>identified and that interventions to support these are prioritised by all Partners involved. The Strategy is founded on the key principle of addressing inequality through economic growth.</p>	<ul style="list-style-type: none"> • <i>Developing Places: Empower the region's communities to address their distinct economic challenges and opportunities;</i> • <i>Better Skills, Better Opportunities: Create a vibrant culture of opportunity in the region to retain and attract people of working age and improve the competitiveness of individual businesses;</i> • <i>Well Developed Infrastructure - Enhancing regional connectivity, removing barriers to business competitiveness and improving access to economic opportunities for individuals and businesses;</i> • <i>Investment Projects - Large investment projects that will make a significant impact on the regional economy; and</i>
	<p>Dumfries and Galloway Regional Tourism Strategy (2011-2016)</p>	<p>The Regional Tourism Strategy outlines Dumfries and Galloway Council, Destination Dumfries, and Visit Scotland's strategy for developing tourism in the county.</p>	<p>The vision is "To establish Dumfries and Galloway as a world-class destination in which our visitors receive a superb quality of service, where our products and services exceed their expectations. This will maximise the long-term economic and social benefits which sustainable tourism can bring to the region". The document outlines 6 objectives including increasing the volume of Visitors to Dumfries and Galloway.</p>
	<p>Bus Action Plan (2009)</p>	<p>The Bus Action Plan provides an outline of the situation in terms of the bus network in Dumfries and Galloway.</p>	<p>The document includes information on the status (as of 2009) and planned improvements in each of the following areas: communication strategy; quality of buses; bus stop infrastructure; community transport; schools transport; and funding interventions.</p> <p>The document highlights the cost of bus travel as an issue. In addition, it notes that connections between Dumfries, Glasgow and Edinburgh are limited. The Dumfries to Glasgow service has a journey time of two hours but because of the high ticket cost demand is low. The Dumfries to Edinburgh service is supported by a number of authorities and has a running time of three hours as it is a series of joined up local bus services serving the main towns rather than a fast link to Edinburgh.</p>

Level	Policy, Plan or Strategy	Purpose	Objectives
			<p>The document notes that the south West of Scotland would benefit from a national long distance express coach operation, on say a 2 hourly headway, throughout the day, to improve connectivity with Glasgow and Edinburgh.</p> <p>The document also supports integrated ticketing, noting that there would be particular benefit if all the bus and train companies in the south West were included.</p>
Local	Local Transport Strategy (Dumfries and Galloway Council, 2011-2016)	<p>The Local Transport Strategy (LTS) sets out Dumfries and Galloway Council's Action Plan for transport in the area between 2011 and 2016. SWestrans and Dumfries and Galloway Council share the same boundary and the RTS and LTS consequently cover the same geographic area. However, the LTS is focussed upon local networks and services whilst the RTS focuses upon wider connectivity.</p>	<p>The Vision for the LTS is defined as: "To develop better transport systems where they are most needed to support an ambitious, prosperous and confident Dumfries and Galloway where people achieve their potential".</p> <p>Five strategic objectives are identified, as follows:</p> <ul style="list-style-type: none"> • Assist Economic Growth through the provision of the best possible transport infrastructure and services; • Promote Social Inclusion through the provision of transport services suitable for all residents; • Protect our Environment by coordinating land use planning and transport and, where travel is necessary, encourage efficient and sustainable transport; • Improve Road Safety by reducing the likelihood of accidents through Engineering, Education and Enforcement initiatives; and • Improve Integration of Journeys through the encouragement of better transport. <p>The document outlines a strategy which balances demand management and the promotion of alternative modes of transport and includes an action plan of key measures.</p>

Level	Policy, Plan or Strategy	Purpose	Objectives
	<p>Local Development Plan (Dumfries and Galloway Council, 2014)</p>	<p>The LDP sets out the strategy to guide future land use and development within Dumfries and Galloway until 2024</p>	<p>Vision includes:</p> <p><i>"It will be a thriving region with a sustainable economy built on sustainable principles that safeguard the landscape, natural and historic environment, promote growth, maximise the use of existing infrastructure and enhance connectivity. It will have maximised its location to attract investment to create employment and investment opportunities which will in turn attract people of working age to the region. There will be opportunities in the rural area for economic development, housing and recreation."</i></p> <p><i>"A viable rural economy and community characterised by:</i></p> <ul style="list-style-type: none"> • <i>access to sustainable transport</i> • <i>ready access to higher education"</i> <p><i>"Vibrant towns and villages that have:</i></p> <ul style="list-style-type: none"> • <i>access to a wide range of sports, recreation and leisure activities"</i>
	<p>Single Outcome Agreement (Dumfries and Galloway Council, 2013 - 2016)</p>	<p>The Single Outcome Agreement sets out Dumfries and Galloway Strategic Partnership's vision for Dumfries and Galloway and is the main partnership planning document for the region.</p>	<p>The overarching vision is <i>"working together to create an ambitious, prosperous and confident Dumfries and Galloway where people achieve their potential"</i>.</p> <p>Relevant aims include:</p> <ul style="list-style-type: none"> • <i>Priority 4: We will support and stimulate our local economy - To do this we will provide the right type of physical infrastructure including strategic transport links with Northern Ireland, north of England and the rest of Scotland (particularly Ayrshire and the Scottish Borders)</i> • <i>Priority 6: We will protect and sustain our environment - We want people to choose active travel - our cycling and walking facilities - as that will bring us benefits in health improvement, tourism and carbon reduction and we want to have a fully integrated and accessible transport system including taxis, buses, trains and ferries.</i>

Level	Policy, Plan or Strategy	Purpose	Objectives
			<p>It is noted that the over-65s population is likely to grow by 21% by 2020 and 46% by 2035 (20% for those aged 65-74 and 77% for those aged 75 and over) . There is therefore a growing requirement for suitable transport.</p>
	<p>Dumfries and Galloway Outdoor Access Strategy (2012-2017)</p>	<p>The Dumfries and Galloway Outdoor Access Strategy provides a vision for outdoor access and the strategic framework for planning, managing and developing access in Dumfries and Galloway</p>	<p>The vision for the document is that within the next five years:</p> <ul style="list-style-type: none"> • barriers to access will be reduced following the enhancement and promotion of core paths; • communities will have developed a sense of responsibility for local paths; • residents will be leading more active lifestyles; • the countryside will be used to support and promote local enterprise; • developers will be contributing to enhancing and developing access; and • public bodies will be working in partnership to support communities, reduce health inequalities, promote the region and protect the environment. <p>The strategy aims to help residents lead more active lifestyles and increase opportunities for outdoor recreation and sustainable travel.</p>

Appendix F Part 1: Option 2 Development

F.1 Introduction

F.1.1 Option 2 relates to bus priority measures within Dumfries town centre.

F.1.2 Through discussion with council representatives it was established that:

- A Split Cycle Offset Optimisation Technique (SCOOT) system was implemented in Dumfries in 2000 with the system installed at just under 20 junctions in the town centre. As part of the implementation, selective vehicle detection loops were installed with all buses fitted with transponders to enable bus prioritisation at signals. However, there were issues with the reliability of the system and the varying and conflicting patterns of bus movements in the town centre meant the system was 'fighting itself' to give priority. As a consequence, the bus prioritisation capability was disabled at all but a bus gate on Glasgow Street.
- At some locations an alternative system was subsequently implemented which utilised loop detection of buses to provide a hurry call at signals. However, its implementation had a significantly detrimental impact on general traffic capacity and was subsequently removed. The only SVD system now operational is a video detection system at the Glasgow Street bus gate at the end of the related bus lane. This system utilises two virtual loops which requires both loops to be occupied in order to be triggered, and as a consequence, any large vehicle abusing the bus lane would be registered as a bus on the loops and activate the bus gate. In addition, there were issues with car headlights activating the system at night. The system is currently still operational despite these issues, operated by a TrafiCam video recorder.
- The SCOOT system is still operational, working to optimise the town centre signals. The system currently has thirteen junctions and four pedestrian crossings. A further junction just outwith the SCOOT area (Three Road Ends) was upgraded from VA control to MOVA control in October 2015, with the option to convert to SCOOT control should the need arise in the future. However, the majority of the existing SCOOT network has not undergone any form of detailed recalibration since its initial installation in 2000, something which is advised on an annual basis. The most recent re-evaluation of any part of the SCOOT network was Buccleuch Street Bridge in 2011. This did not however involve any link validation or calibration. Congestion and delays on the network, and therefore delays to public transport, could be addressed by comprehensive examination and analysis of the operation of the existing SCOOT network and the implementation of improved SCOOT translation plans, an automatic plan selection strategy, improved standalone pedestrian crossing strategies within the network, and a robust incident management strategy to then be reviewed on a more regular basis. The recalibration of parameters is essentially a two stage process. The first, link validation, can be carried out at any time. The second more detailed part of the process is SCOOT parameter validation which could not be carried out until after the Dumfries and Galloway Royal Infirmary migration to the new site is complete and traffic patterns have settled. Investment in a recalibration of the system, while not providing prioritisation for bus movements, would likely provide an overall improvement in town centre traffic movements and as such would benefit bus movements as a consequence.
- Investment in smarter technology, with wireless detection would also provide a more intelligent system which could enable information to be feed directly back to bus companies on bus movements and journey times, providing an opportunity for service providers to understand bus performance across the network and identify any timetable alterations required. It would also enable the existing bus gate on Glasgow Street to operate more reliably.
- Investment in the SCOOT system with annual recalibration of parameters within the system would provide an adaptable traffic management system capable of adjustment when needed. This may be highly beneficial in instances where any significant traffic management change was

implemented or land-use change/development occurred. A key example of this is the upcoming move of the Dumfries and Galloway Royal Infirmary site to a new site to the west of the town – a move which is likely to alter transport access by both staff, patients and visitors. In addition, any traffic modelling work outcomes undertaken to support the relocation of the hospital could be fed into the system to improve overall network performance. In addition, the development of Dumfries Learning Town has the potential to impact on traffic movement due to the busing of students between the four secondary schools and to the new 'The Bridge' facility. Any changes to traffic flows as a result could also be taken account of in the SCOOT system.

Appendix G Part 1: Feasibility - Option 6

G.1 Introduction

G.1.1 This appendix develops an understanding of the following in light of a potential railway station in Beattock:

- How an extension of High Speed Rail 2 (HS2) into Scotland may impact on the West Coast Main Line, the opportunities that would enable and the steps which might be required to engage;
- The potential impact of the Scotland Route Study proposals on both the West Coast Main Line and Glasgow South West Line in relation to both passenger and freight services;
- Existing and potential future capacity on the rail routes;
- The effects of providing any new station(s) on the wider rail network; and
- The potential use of the stations as rail freight hubs (as well as passenger stations).

G.2 HS2 Extension into Scotland Impacts

G.2.1 A review of the HS2 publication “*Broad options for upgraded and high speed railways to the North of England and Scotland*”, jointly commissioned by DfT and Transport Scotland, and published in March 2016 has been undertaken to understand if/how the potential impacts of HS2 could support the case for a railway station at Beattock.

G.2.2 It sets out to achieve a London to Edinburgh/Glasgow journey time of three hours to “*deliver to generate around £3 billion of present value (PV) in benefits and £3 billion (PV) in revenue*”. This is in addition to the benefits delivered by Phase Two to Manchester and Leeds.

G.2.3 It identified that delivering this aspiration was not possible within the footprint of the existing railway, but that achieving a 3-hour journey time to Glasgow and Edinburgh through upgrades to existing lines would require around 137 miles (220km) of new high speed bypasses on the West Coast Main Line. These would cost £17 billion - £19 billion and would present sustainability and engineering challenges, similar to those for a new line. Furthermore, on the unimproved sections of the railway, existing challenges regarding capacity, traffic mix, disruption and resilience would remain.

G.2.4 This length of upgrades represents approximately two-thirds of the West Coast Main Line.

G.2.5 They also looked at a new High Speed line to Scotland which would require more than 190 miles (300 km) of new railway. This would increase capacity, which is constrained on the existing rail network, and reduce journey times. A high speed route option has been developed which closely follows the topography and existing transport infrastructure corridors whilst delivering a journey time of 3 hours. This option would serve both Glasgow and Edinburgh equally. This high speed alignment was designed to include localised reductions in speed in challenging locations, reviewing sustainability features, whilst delivering capacity and journey time benefits. The option would run north from the western leg of Phase Two. It is suggested that this route would cost £22 billion - £25 billion, (excluding the cost of an Edinburgh to Glasgow high speed line, into which it would connect.)

G.2.6 Continuous, full high speed routes with Phase Two as a starting point could provide a journey time between London and Scotland of 2 hours and 30 minutes, an improvement of 1 hour and 8 minutes on the Phase Two journey time, and nearly 2 hours on the current journey time. In addition, journey times to cities in the North East or the North West of England could be significantly improved.

- G.2.7 Upgrades would cost less than a new line and would allow benefits to be delivered in stages, but would not bring the same capacity benefits nor provide the resilience of a new line.
- G.2.8 Staging the delivery of any of the options would provide the benefits of a full implementation incrementally. Working with Network Rail, the study has identified a number of priority areas for intervention, such as congested areas or steep gradients with large speed differentials. However, further consideration would be required as to how a staged approach could be delivered in a way that complements Network Rail requirements and investment plans.
- G.2.9 The key issues that have been identified are the mismatch between the speeds of freight trains and those of high speed passenger trains. This is exacerbated by the steep gradients such as the climb up Beattock from the south to Beattock Summit, where a diesel hauled freight train can take as long as 27 minutes to cover the same distance as an electrically hauled freight train takes 15 minutes and for a high speed passenger train takes only 5.5 minutes.
- G.2.10 The report suggests that enhancements to the West Coast Main Line north of Phase Two's connection points could provide many advantages, although they may not be able to deliver as much in journey time improvements on HS2 services to Scotland compared with a full high speed option.
- G.2.11 Both high speed services and long-distance classic passenger services could derive journey time improvements from these enhancements. Investment could be targeted to sections of the classic line where there is a high utilisation of the route, and a relatively high benefit and revenue gain could be made by reducing journey times compared with other sections of the line.
- G.2.12 A route which follows the existing West Coast Main Line relatively closely could allow high speed London-Scotland services to easily access existing central stations, where this is considered more advantageous than a new parkway station.
- G.2.13 If enhancements provide a bypass on the classic line at a point of likely congestion or delay, such as the climb up Beattock, this could provide further benefits by allowing improved sequencing of services and reducing issues associated with trains of different speeds operating on the same line.
- G.2.14 The question of how to serve intermediate markets from a full high speed route between the North of England and Scotland would need to be considered further. Initial analysis suggests that parkway stations offer lower benefits and revenue than using the central station.
- G.2.15 The report gives indications of thinking and is clear that long bypasses have a lower cost per minute of journey time saved than short bypasses due to the potential to achieve and sustain a higher running speed, and because the extra costs of leaving and joining the existing railway are mitigated by a greater length of bypass. Bypasses in difficult terrain have a higher cost, but as the existing line in these areas is often slower, the potential benefits are greater, which suggests that a Beattock bypass could be an option. Apart from the obvious construction benefits of building off the existing railway, bypasses can offer improvements in capacity as well as speed, as they would enable dynamic overtaking of slower trains, such as freight.
- G.2.16 They could be designed to high speed standards, allowing operation at up to 250mph (400kph) where practicable, and so could ultimately be joined together to form a continuous end-to-end high speed route.
- G.2.17 **Even if bypasses were only used by a few fast trains, the capacity of the existing line would be improved, as they would remove the speed differential between fast trains and local services, which could continue to use the existing line.**
- G.2.18 A typical package of bypasses required to achieve a 3-hour journey between London and Glasgow/Edinburgh would require approximately two-thirds - 124 miles (200km) of the route north of HS2 to be on a new high speed line.

- G.2.19 The report then considers the route sections north from the proposed end of Phase Two, including the Carlisle to Carstairs section, including specific reference to the climb up from Beattock to Beattock Summit. The thinking is strongly influenced by journey time saving rather than capacity issues.
- G.2.20 The report looks at the potential for a bypass from near Gretna Junction to Beattock village where, although the maximum conventional speeds over some of this section are high, the potential journey time savings are less than elsewhere. However, the terrain is also easier, so construction costs could be relatively low, and a bypass in this area has a reasonable journey time to cost ratio.
- G.2.21 A bypass from Gretna to Beattock village would save almost 10 minutes in journey time.
- G.2.22 While a shorter bypass to avoid only the steepest section between Beattock village and Beattock summit is possible, realistically the bypass would be extended to avoid the slow section of line at the 'Crawford Curve', which is an early priority to bypass. The likely outcome is a longer bypass as far north as Abington north of which higher speeds are possible and would save 4.5 minutes.
- G.2.23 The undulating terrain means the cost per kilometre is relatively high, but it would resolve one of the major constraints on the West Coast Main Line, as well as providing some journey time saving on the relatively low-speed section through the hills. It would re-join the existing route near Abington, where higher speeds are possible to Carstairs and there is no significant capacity constraint, if the Beattock area immediately to the south is bypassed.
- G.2.24 Bypass options were selected based on providing the most cost-effective journey time reduction until the 3-hour target time was reached. This includes the whole of the route from Abington to the Scottish Border. However, the phasing suggested putting the Abington to Lockerbie section bypassing Beattock as third after proposal around Lancaster and Shap Summit in northwest England.
- G.2.25 The option of a full High Speed route is considered and north of Carlisle the route would follow the West Coast Main Line and A74(M) corridor past Lockerbie. Through the southern Uplands, the design speed has been reduced to a minimum of 150kph (93.5 mph) to follow the contours of the topography and the existing transport corridor with some sections of tunnelling required.
- G.2.26 The route would follow the West Coast Main Line towards Carstairs and join at the approximate mid-point of a high speed line between Edinburgh and Glasgow. At this location a station facility would allow for trains from the south to split in order to serve both Glasgow and Edinburgh, and join in this location to head south. The report did not include any work to design or appraise a potential high speed route between Glasgow and Edinburgh.
- G.2.27 **This work has concluded that there is potential for a route which achieves a 3-hour journey time between London to Glasgow and Edinburgh, at a lower cost than a full high speed route.** By reducing the design speed in specific locations, the alignment is able to follow the topography and existing transport corridors more closely, thereby reducing costs associated with long structures and large volumes of earthworks.
- G.2.28 Initial consideration of how the delivery of the route could be staged has highlighted how the same congested areas on the existing network would benefit from capacity relief, but that long sections would be required to achieve significant journey time savings.
- G.2.29 Finally, it concluded that some of the potential interventions may deliver synergies with Network Rail's long-term investment plans. It may be appropriate to consider in collaboration with Network Rail whether this work could help to inform consideration of possible upgrades on this section of the West Coast Main Line
- G.2.30 The remit included improvement to freight paths which was included as an integrated part of the study. When improvements incapacity was being assessed, it included capacity for both freight and

passenger services. In developing this work, Network Rail provided input on current paths and future growth to inform the development of improvements for freight.

G.2.31 It suggested that freight would benefit most from capacity created on the existing lines when passenger services move onto an adjacent high speed line, or bypass sections. Bypasses would also enable passenger trains to overtake freight trains and reduce the need for freight trains to be stopped in loops to be overtaken, which would also improve journey time for freight.

Summary

G.2.32 The review has highlighted that:

- **The future progress and development of HS2 in the UK and in Scotland is still full of uncertainty.** It is not 100% certain that HS2 will be built in any form, anywhere. The Brexit vote has increased uncertainty about public finances and travel demand. This has not manifest itself as obvious pressure to cancel HS2 at present, but history tells us that large projects, especially ones where there is some opposition, are the potential casualties in the future if tough decisions have to be made; and
- **It is clear that HS2 is fully focused on the Phase One line between London and Birmingham and the West Midlands, with the need to deliver Phase Two to Crewe also very high on the agenda.** There appears to be little interest in Scotland, other than to ensure it does not impact adversely on the tasks in hand, which translates into doing the minimum necessary to deliver the published services and journey times.

Conclusion

It is suggested that any proposals to provide a railway station at Beattock need to be based on the current position, but with a view to the opportunities that HS2 may offer in the future. HS2 cannot offer any support or aid for a railway station at Beattock at this stage.

G.3 Scotland Route Study Proposal Impacts

G.3.1 A review has been undertaken of the Scotland Route Study which was published on 14th July 2016 and was the culmination of extensive work within the Scottish rail industry and consultation with wider stakeholders. The review has been undertaken to identify if/how the study outcomes could support the case for a railway station at Beattock.

G.3.2 The Scotland Route Study was published on 14th July 2016 and was the culmination of extensive work within the Scottish rail industry and consultation with wider stakeholders. The West Coast Main line which is critical for a new station at Beattock is inextricably linked with HS2.

G.3.3 The Route Study states that there will need to be additional infrastructure on the WCML by 2043 to cope with the growing demand for both passenger and freight (page 41). (N.B. 2043 is chosen as the end date by which any scenarios are tested.) The advent of HS2 will exacerbate the issue. **It is clearly stated that significant extra track will be required south of Carstairs in this period as well as already planned remodelling of Carstairs Junctions and work at Glasgow Central.** Rerouting freight and/or passenger trains off the WCML is unlikely to be able to help given the number that can be re-routed.

G.3.4 There is a whole section (Page 44) in the report on four tracking the WCML:

“Summary This option considers the requirement to provide additional capacity on key sections of the WCML, south of Carstairs, to accommodate forecast demand and deliver journey time improvements in Scotland.

Benefits *The existing two track railway on the WCML is already congested and will not provide sufficient capacity and capability required to support the predicted growth and connectivity for long distance passenger services, local passenger services and freight, as expressed in the 2043 ITSS. Governments have aspirations for more, faster train services between Edinburgh/Glasgow and cities in England and Wales and to accommodate forecast Anglo Scottish freight growth.*

This option is linked to the long term strategy of the WCML between Glasgow and London, and facilitating forecast growth in Anglo Scottish freight traffic. Further timetable development has been undertaken (in conjunction with London North West Route team) which has determined that to provide a robust timetable, a significant volume of additional track would be required for the WCML. If HS2 services did not split and join at Carstairs and did, for example, at Carlisle, then in addition to enhancing Carlisle Station additional capacity would still be required between Carlisle and Carstairs.

A significant number of either freight or passenger services would need to be routed via the already busy ECML (or the G&SW) to negate the enhancement requirement.”

- G.3.5 In the Choices for Funders in Control Period (CP) 6 and CP7 (2019-2029) (Page 55) Item 7 High Speed Enabling Projects (Page 69) are shown. This is only to seek funding for development work to understand what is required. This suggests that any physical works are some considerable time off (shown in Appendix 6 of the report).
- G.3.6 This is a cause for concern as it will take many years to design and gain approval for a project that requires Transport & Works Act (TWA) powers and arrival of the first High Speed Trains in Scotland is only a little over ten years away. To put this in context it has taken nine years of development to reach were this point in the Edinburgh to Glasgow Improvement Programme (EGIP) electrification programme with another three years to go. EGIP did not require TWA powers to facilitate its construction.
- G.3.7 The reports' Appendix 6 shows the reasoning behind this proposal. Four tracking of 30 miles of the WCML over Beattock summit is shown as Proposal Ref no 2.3.3 (page 176). This has a delivery period of CP8 (2029 - 34), which is after the proposed introduction of the HS2 services to Scotland using Phase One (London – Birmingham/West Midlands) and Phase Two to Crewe.
- G.3.8 There are relatively few other proposals for the WCML in Scotland in the Route Study and few prior to this period. Carstairs Jn remodelling (Ref No 2.2.1 Page 176) is a much delayed project which is planned for CP6 (2019 – 24). This will improve speeds and reduce journey times on the Carlisle – Edinburgh side of the triangle.
- G.3.9 This suggests that there will be growing congestion issues on the WCML through Scotland until this work is carried out. The conversion of the remaining diesel hauled freight trains to electric haulage may ease the pressure but there does not appear to be a lot of scope
- G.3.10 The 2043 Cross Border Conditional Outputs as impacting on WCML (Page 156) are shown in Table G.1.

Table G.1: 2043 Cross Border Conditional Outputs as impacting on WCML

Reference	Origin to destination (flow)	End to end journey speed (mph)	Opportunities to travel (per hour)
LDCO1	Edinburgh to London	160	3 or 4
LDCO2	Glasgow to London		3 or 4
LDCO3	Edinburgh to Birmingham	100	2 or 3
LDCO5	Edinburgh to Liverpool	100	2 or 3

LDCO6	Edinburgh to Manchester	100	2 or 3
LDCO8	Glasgow to Birmingham	100	2 or 3
LDCO9	Glasgow to Leeds		2 or 3
LDCO10	Glasgow to Liverpool	100	2 or 3
LDCO11	Glasgow to Manchester	100	2 or 3

G.3.11 These Opportunities to Travel are not all direct services but will include travel opportunities that involve connections. The London services clearly seek to make use of the planned High Speed network and the 160 mph implies a 2 hour 30 minute journey time – i.e. a complete High Speed Route between London and Scotland.

G.3.12 The 100mph end to end speeds imply the use of a complete High Speed Line but with a number of station calls.

G.3.13 The Route Study crystallises out the various demands into “defined opportunities to travel” in 2043 for internal Scottish flows. One of these is GC029 (page 146) includes reference, under the interurban category of a Stirling to Carlisle via Coatbridge opportunity to travel per hour.

Summary

G.3.14 Key points from the study in relation to Beattock include:

- There will need to be additional infrastructure on the WCML by 2043 to cope with the growing demand for both passenger and freight;
- Significant extra track will be required south of Carstairs in the period to 2043 as well as already planned remodelling of Carstairs Junctions and work at Glasgow Central but any physical works are some considerable time off;
- The study crystallises out the various demands into “defined opportunities to travel” in 2043 for internal Scottish flows. One of these is GC029 which **includes reference, under the interurban category of one Stirling to Carlisle via Coatbridge opportunity to travel per hour, which could present an opportunity for Beattock.**

G.4 Investing in the Future Choices for Scotland’s Railways 2019 and beyond – Review

G.4.1 The Rail Delivery Group (RDG) published “Investing in the Future Choices for Scotland’s Railways 2019 and beyond¹²” on 23rd September 2016.

G.4.2 It follows on from the Scotland Route Study and makes specific recommendations for possible investment in Scotland’s railway in the medium term. There are no major surprises or changes of direction from the options considered and developed in the Scotland Route Study.

G.4.3 However, it does set the agenda for the funding discussions which will take place with Scottish Government, through Transport Scotland, over the next two years and sets the course for the railway well into the 2020’s. For this reason, it is important. Key points in the context of the GSWL are:

- A more detailed “Industry Advice to Ministers” will be published in early 2017;

¹² <http://www.raildeliverygroup.com/media-centre/press-releases/2016/469762882-2016-09-23.html>

- It uses the Borders Railway as a Case Study as part of a regeneration package;
- There is a section (Chapter 4) linking the railway into the Scottish Government's Economic Strategy, which includes specific reference to Rural Policy;
- It recognises the possible trade-offs including journey times vs connectivity as an issue for "Key corridors".
- Glasgow Central Capacity issues are presented as a Case Study which might impact on WCML;
- The approach to delivery is set out and offers a template for future work.;
- The most important section is "A Connected Scotland" which sets out the priorities.

G.4.4 The "A Connected Scotland" section includes reference to potential projects that will or could impact on the WCML:

- **Carstairs Area Enhancement**

This is a potentially large project that could be (depending on the final decision on the scope of the project) be highly disruptive for the WCML. It will however reduce journey times on the Carlisle – Edinburgh corridor which could be used to compensate for additional calls at Beattock. This would still leave the issue of extended journey times in trains to/from Glasgow; and

- **High Speed Enabling Projects**

This is for development work, not delivery, with delivery likely to be in the later 2020s. It will be driven by a combination of the demands for extra capacity on the WCML northern section, regardless of whether HS2 happens, although the advent of HS2 services is driving the pressure to look at this. As there will potentially be significant land and planning issues, so it is a time to start to engage actively with Network Rail and presents an opportunity to seek a "local dividend" as part compensation to the community for the national important WCML upgrade project.

G.4.5 These proposals come with significant price tags.

G.4.6 There are proposals to continue with the "Ring Fenced Funds" which include the Scottish Stations Fund, the Level Crossing Fund and the Network Improvement Fund, all of which may prove of value to the WCML to create capacity for Beattock station as well as provide part funding for the station, although the station fund will only provide a maximum of 50%.

G.4.7 There is, however, nothing in this document specifically for any of the rural routes, although there are a number of proposals for the major routes and suburban areas.

Conclusion

At first sight, the "Investing in the Future Choices for Scotland's Railways 2019 and beyond" document offers little for a possible station at Beattock. In line with established policy, it does not propose any new stations or routes. However, it does create an opportunity for dialogue on a more integrated approach to developing the WCML and to providing benefits which will enable Beattock station to be delivered.

G.5 Potential for re-opening Beattock Railway Station and impacts on the wider rail network

History

- G.5.1 The issues for a potential Beattock station are all about how to provide a train service for the station.
- G.5.2 These are the same issues that lead to the closure of Beattock station in 1972 when the WCML electrification was being extended to Glasgow. Then the desire was to operate London – Glasgow services with competitive journey times against the developing air and coach markets. Beattock was the one remaining “local” station on the line so it was closed. Some of the WCML village stations had been closed in 1960 and the remainder, when the local services were withdrawn, in 1965.
- G.5.3 This was a period of significant retrenchment in Scotland: The Waverley route had closed three years earlier and the main Edinburgh to Perth route closed in 1970, and Dalry to Kilmarnock closed in 1973, another casualty of the WCML modernisation programme. This was also the time when large sections of the GSW line was converted to single-track.

Options

- G.5.4 The 2043 Conditional Outputs present the same issues as the current timetable; the balance between end-to-end intercity journey times and the needs of existing or potential new stations.
- G.5.5 There are two potential methods, discussed further below, to provide a rail service at Beattock station:
- **Option A:** Calls made by existing long distance train services; or
 - **Option B:** Additional Local services - the provision of a local train service calling at existing/new stations on the WCML between Carstairs and Carlisle.

Option A: Calls made by existing long distance train services

- G.5.6 There are three long distance services along this stretch of the WCML, broadly:
- Glasgow – Euston,
 - Glasgow/Edinburgh – Birmingham; and
 - Glasgow/Edinburgh - Manchester/Liverpool.
- G.5.7 All of these are competing directly with air services for a significant part of their business:
- Glasgow - Euston struggles to compete with flights on journey time at present, but the advent of HS2 will change that although not conclusively until a below three-hour journey time is achieved;
 - Edinburgh/Glasgow – Birmingham is also at the limits of rail competitive journey times and will need to be speeded up considerable to generate a significant modal shift to rail. But it is also providing important interurban flows within England so the calling pattern in England will need to remain. HS2 will offer some benefits when Phase Two to Crewe opens, **but the pressures to reduce journey times will remain and there will be strong resistance to adding calls;**
 - Edinburgh/Glasgow – Manchester/Liverpool has been a big rail success under TransPennine with an increase in the number of services operated, increases in train capacity and reductions in journey times towards the competitive three-hour target. This has significantly reduced the air market share on the parallel air routes, with the only recent improvement in air travel options being a new Edinburgh – Liverpool rotation, which is not served by a direct rail service.
- G.5.8 The Edinburgh/Glasgow – Manchester/Liverpool TransPennine service provides an important regional links in England, linking the North-west and Cumbrian towns to Manchester - the major regional centre. They also provide the complete service at Lockerbie, which is now well connected

- to both Edinburgh and Glasgow. However, Motherwell which could function as a south and east Glasgow area Park & Ride (and also had good rail connections) is not well served by any long distance trains running on the WCML and is the station most likely to benefit from any extra calls added.
- G.5.9 With the changes in the TransPennine rolling stock planned for 2019, offering more capacity and higher top speeds, and the addition of a small number of additional services, notably Liverpool – Glasgow, there is an opportunity to revisit calling patterns.
- G.5.10 However, it is likely that TransPennine will be seeking to capitalise on the higher top speeds and reduce journey times, especially to Manchester in a bid to compete more effectively with the remaining air market and their preference will be to avoid adding additional calls at relatively small throughput stations.
- G.5.11 It is clear from the Scotland Route Study and the HS2 Report that the WCML is already operating at a high level of capacity use given the wide mix of traffic and traction types. This will only get worse as there becomes more pressure to add additional trains, both passenger and freight.
- G.5.12 There are already additional passenger trains planned for the route with the new TransPennine franchise providing two additional services between Edinburgh/Glasgow and Manchester via WCML by December 2019 and three additional services pairs between Liverpool and Glasgow.
- G.5.13 The West Coast franchise will be retendered shortly to start with a new franchisee in April 2018. However, because of the advent of HS2, it is unlikely that there will be a major change in the nature of the operation on the WCML in Scotland.
- G.5.14 There is ongoing change in the rail freight industry with the disappearance of any residual coal trains, but ongoing interest in running additional multi-modal trains. The arrival of the ten new class 88 electric locomotives for Direct Rail Services (National rail freight operator serving the nuclear fuels industry and other customers in the United Kingdom), which are equipped with a diesel engine to facilitate access to depots (the so-called “last mile” capability) coupled with electrification from Cumbernauld to Grangemouth, will replace the diesels on the Daventry to Grangemouth trains and should result in reduced running times.
- G.5.15 There are so many changes likely to take place on the WCML during the gestation period of a potential new railway station at Beattock, that trying to identify specific paths for new train services or the impact of additional calls in existing services is unlikely to inform future options.
- G.5.16 However, at a more strategic level, views can be taken:
- The addition of calls at a re-opened Beattock Railway Station by TransPennine trains could, if planned now, be done with the minimum impact on the timetable structure, although it **would potentially impact adversely on journey times**. These would not get longer, but the reduction in journey times toward the very competitive three-hour city centre to city centre times will be less than without a call.
 - With the additional services being provided it would be possible to call at Beattock instead of another smaller station, either Lockerbie or a smaller Cumbrian station. In this instance there will be a loss of service/revenue elsewhere which may be bigger than the benefits arising at Beattock.
 - Another option, which only works for the Edinburgh services, would be to use the journey time saved by the Carstairs remodelling to compensate for the extra call at Beattock. This would fix a timescale for the opening of Beattock station linking it to the delivery of the Carstairs remodelling.

Conclusion

There are so many changes likely to take place on the WCML during the gestation period of a potential new railway station at Beattock that trying to identify specific paths for new train services, or the impact of additional calls in existing services, is unlikely to inform future options.

At the strategic level, addition of calls at a re-opened Beattock Railway Station by TransPennine trains could, if planned now, be done with the minimum impact on the timetable structure, although it would potentially impact adversely on journey times effecting the ability of rail to compete with the air travel market. While it would be possible to call at Beattock Railway Station instead of another smaller station, either Lockerbie or a smaller Cumbrian station, there would be a loss of service/revenue elsewhere which may be bigger than the benefits arising at Beattock.

In summary, it is unlikely that long distance trains could form the base load train service if Beattock Railway Station were to re-open.

Option B: Additional Local Services

- G.5.17 The Scotland Route Study crystallises out the various demands into “defined opportunities to travel” in 2043. One of these is GC029 (discussed on page 146 of the Scotland Route study report) which includes reference, under the inter-urban category, to one **Stirling to Carlisle via Coatbridge opportunity to travel per hour**.
- G.5.18 This Stirling – Carlisle via Coatbridge ‘Opportunity to Travel’ may offer an opportunity to support a new train service to serve Lockerbie and Motherwell, which could also call at a very limited number of stations (existing or new) between Motherwell and Carlisle.
- G.5.19 What is not clear is whether this is intended to operate as a complete through service, or by providing connections at Motherwell to/from a Stirling – Motherwell via Coatbridge service. However, the reference to Carlisle does give the opportunity to explore this option in relation to Beattock.
- G.5.20 The service would offer direct links from the Stirling and Falkirk areas (the latter though Larbert) to Carlisle for connections to the West Coast Main Line, although it will also offer local journeys in the Glasgow area. It is very much in the post HS2 services era as it is a 2043 Conditional Output.
- G.5.21 The provision of the service could offer a number of beneficial outcomes:
- Providing direct links for journeys that currently require inter-station changes in Glasgow,
 - Providing shorter journey times compared with connecting via Edinburgh or Glasgow,
 - Reducing passenger numbers on feeder services into Edinburgh and Glasgow,
 - Reducing passenger numbers at key connecting stations
 - Providing direct “local” journeys from Stirling / Larbert to Cumbernauld / Coatbridge / Motherwell
- G.5.22 However, it is unlikely to be a heavily used service and will probably require a degree of public funding to cover operating costs. It will take capacity on various heavily used route sections and, as it cuts across a number of routes, timetabling to provide competitive journey times and the required connections will be complex.
- G.5.23 There are a number of wider opportunities that a Stirling – Coatbridge – Motherwell – Carlisle service offers:
- For the WCML route section it could provide the link from Motherwell, possibly another station south of Motherwell (Carluke or Carstairs, possibly both) to serve the Lanark area and Lockerbie, to replace calls in some of the TransPennine services.

- **This service could also call at a new station at Beattock**, but probably no more than one other local station. Travel to Edinburgh and Glasgow would require a change of train, possibly at Carstairs/Carlisle and Motherwell respectively.
- G.5.24 The impact of this completely new service on the WCML is not easy to predict. The Stirling – Carlisle service would be operated by 100mph (possibly 110mph) electric multiple units (emus) which will have high acceleration and relatively short station dwells. They will be considerably slower over the Carstairs – Carlisle section than non-stop express trains, but will not be so much slower than electrically hauled non-stop multimodal trains running at 75mph.
- G.5.25 The key point is that they will fall between the two predominant types of train using the route so it is probably that train paths will be found that fit between the existing passenger trains but without any significant impact to freight trains.
- G.5.26 Their position in the timetable is already defined by their potential use as connections into and out of long distance services calling at Carlisle. So southbound they would need to be timed to arrive in Carlisle just in front of the flight of southbound fast trains to Euston, Birmingham and Manchester and northbound to follow the flight from Carlisle, providing connections from these places.
- G.5.27 **It may therefore be possible to plan a new Stirling – Carlisle service which calls at Beattock without new infrastructure.** However, the Business Case for such a service will be challenging and will be dependent on a significant number of other factors, not only on the contribution that Beattock Railway Station would make. It should also be borne in mind that as the opportunity is in the Scotland Route Study it is a rail industry suggestion, so is not Transport Scotland (TS) or Scottish Government policy at present. However, TS would have been party to the development of the Scotland Route Plan so it is unlikely that they are strongly opposed to the concept.
- G.5.28 **For this concept to gain acceptance it will need “champions”.** The Regional Transport Partnerships (RTPs) are the natural bodies to drive rail changes forward and develop concepts with TS, who are likely to require a full STAG Appraisal to justify the proposal.
- G.5.29 There are four RTPs and five local councils in Scotland who would potentially be involved (potential station calls are noted):
- SWestrans and Dumfries and Galloway Council: Lockerbie and Beattock stations;
 - Strathclyde Passenger Transport (SPT);
 - South Lanarkshire Council: Symington, Carstairs and Carlisle stations;
 - North Lanarkshire Council: Motherwell, Coatbridge Central and Cumbernauld stations;
 - SESTRANS and Falkirk Council: Larbert station; and
 - TACTRANS and Stirling Council: Stirling station
- G.5.30 Each of these nine organisations will have different interests and priorities which may, but more likely may not, include a train service of this nature. This is likely to make any development of the concept more complicated and time consuming than some of the projects that have been under development, often for years (the proposed East Lothian and Border train service to serve new stations at East Linton and Reston is an example, but recent Scottish railway history is littered with projects that have taken considerable time (and effort) to bring to fruition including the Aberdeen - Inverness upgrade, Kintore and Dalcross stations, upgrades to services on the Highland Main Line, and even Robroyston station).
- G.5.31 However, Stirling - Coatbridge - Motherwell - Carlisle is a low capital cost scheme, in that it will not require any additional infrastructure for it to operate. This would then leave the potential two new

- stations (Beattock and potentially Symington) as free-standing projects which can be developed in their own right once there is a train service with the capability to call at them.
- G.5.32 Early engagement with the potential beneficiaries would be vital to form a common interest group to give focus to the concept, but a smaller empowered working group is likely to be the most effective way of progressing a project of this nature.
- G.5.33 The local councils are likely to need to drive this, bringing their RTPs with them. But these councils do not have obvious common interests, falling into three groups: Stirling and Falkirk, North Lanarkshire, South Lanarkshire and Dumfries and Galloway.
- G.5.34 There may also be interest from Carlisle City Council and Cumbria County Council as this service would reinforce the importance of Carlisle as an interchange and thus the reason for stopping long distance trains there. Currently all long distance trains stop at Carlisle, but HS2's priority is reduced major city to city journey times so there will need to be strong arguments to justify station calls at intermediate points. Consequently, any initial exploratory proposal should include HS2 stakeholders and possibly the Department for Transport, although their focus is currently further south.
- G.5.35 This concept should be able to use the East Linton and Reston station proposals as a precedent. This is helpful given the strong support the Scottish Government gave to these new stations, including options for the train services in the ScotRail refranchise process. The major reason for lack of progress in delivery is the escalating costs of the stations, which is a major problem throughout the UK.
- G.5.36 The major risk to the delivery of the Stirling - Carlisle service will be capacity on the WCML. However, the trains most likely to be used would be some of the 3 car class 385 electric multiple units currently being bought for the EGIP electrification. There are options to purchase more than the original EGIP requirement (it is not known whether these options still stand). These trains are capable of 100 mph and have high acceleration, which means that the speed differential between these new services and the non-stop passenger trains will fall with the Stirling - Carlisle trains able to follow the faster non-stop trains without falling too far behind. Equally they will be able to run ahead of the 75 mph electrically hauled multimodal freight trains. Because this service avoids the very congested areas around Haymarket/Waverley and Glasgow Central it will be slightly easier to plan than additional services to Edinburgh and Glasgow.
- G.5.37 With the exception of Carstairs and Coatbridge Central, there are no major issues with the current stations at which this service would call as they are all in generally good condition and suitable for long distance services. Coatbridge Central does not present a good first impression for long distance passengers and is not accessible, with no step free access to the southbound platform, there are no staff, ticket machines or car parking. Carstairs has no car parking, ticket machine or step free access and staffing is limited to mornings.
- G.5.38 Considering existing train running times:
- A new Carlisle - Stirling service calling at Lockerbie, Beattock, Symington, Carstairs, Carlisle, Motherwell, Coatbridge Central, Cumbernauld, and Larbert would take just under 2 hours.
- G.5.39 By comparison, on the existing network and services:
- Carlisle - Stirling service takes at least 2 hours 20 minutes;
 - Carlisle - Cumbernauld takes around 2 hours 30 minutes (new direct Carlisle – Stirling service time would be 1 hour 35 mins);
 - Carlisle - Coatbridge just over two hours (new direct Carlisle – Stirling service time would be 1 hour 25 mins);

- Carlisle - Motherwell takes around 2 hours in the absence of a direct train (new direct Carlisle – Stirling service time would be 1 hour 15 mins); and
- Carlisle - Carlisle takes between 2 hours 15 minutes and two hours 30 minutes (new direct Carlisle – Stirling service time would be 1 hour).

G.5.40 Whilst these times are illustrative, they indicate that there are potentially considerable journey time savings to be had from a direct train service. There may also be benefits arising from points north of Stirling if connections are kept short at Stirling. This area is also right between (so furthest from) the two main Scottish airports) so rail is at its most competitive for long distance travel along this corridor.

G.5.41 It should be noted that a half hourly Motherwell - Stirling rail service was recommended in the decisions report of the 2003 Central Scotland Transport Corridor Study (Decision 6), but was not implemented at the time due to lack of capacity between Larbert and Stirling and lack of usable platforms at Stirling station. These issues have now been resolved.

Conclusion

There is an opportunity to further explore the potential for a new station at Beattock through consideration of the Scotland Route Study defined Stirling – Carlisle via Coatbridge 'Opportunity to Travel', with a new train service to serve Lockerbie and Motherwell, which could also call at a very limited number of stations (existing or new) between Motherwell and Carlisle. South Lanarkshire Council are currently progressing a study (Upper Clydesdale STAG Study) which includes consideration of re-opening Symington Railway Station. The re-opening of these local railway stations on the line between Motherwell and Carlisle could form the basis for the new local stopping service.

The provision of the service could offer a number of beneficial outcomes including: providing direct links for journeys that currently require inter-station changes in Glasgow; providing shorter journey times compared with connecting via Edinburgh or Glasgow; reducing passenger numbers on feeder services into Edinburgh and Glasgow; reducing passenger numbers at key connecting stations and providing direct "local" journeys from Stirling / Larbert to Cumbernauld / Coatbridge / Motherwell.

For this concept to gain acceptance it will need "champions" and early engagement with the potential beneficiaries will be vital to form a common interest group. The Regional Transport Partnerships (RTPs) are the natural bodies to drive rail changes forward and develop concepts with TS, who are likely to require a full STAG Appraisal to justify the proposal. However, the nine key organisations (four RTPs and five local councils) will have different interests and priorities which may, but more likely may not, include a train service of this nature, which is likely to make any development of the concept more complicated and time consuming.

The service is a low capital cost scheme as it will not require any additional infrastructure for it to operate and the concept should be able to use the East Linton and Reston station proposals as a precedent. The major risk to delivery will be capacity on the WCML, however, because the service would avoid the very congested areas around Haymarket/Waverley and Glasgow Central it would be slightly easier to plan than additional services to Edinburgh and Glasgow.

Considering existing train running times, there are potentially considerable journey time savings to be had from a new direct train service and as the area to be served is right between (so furthest from) the two main Scottish airports) it provides an opportunity to compete for long distance travel along this corridor.

G.6 Rail Freight Hub Potential

G.6.1 The potential for a re-opened Beattock Railway Station to operate as a dual use passenger-freight station has been explored and is discussed here.

- G.6.2 Traditionally there has been some overlap between passenger and freight station activities in the era of labour-intensive railway operation. On today's capital-intensive railway – although common *route* infrastructure is routinely involved – these are now highly separate activities in terms of local demand and supply, with different locational requirements for stations / terminals (both macro and micro), site footprints, site infrastructure, staffing and neighbour impacts.
- G.6.3 On occasions, there may be conflicts between passenger and freight requirements, for example where a new passenger station might encroach on sidings or loop lines otherwise used by, or potentially usable for, rail freight traffic.
- G.6.4 The inherent technical characteristics of rail operation (guided track, steel wheel on steel rail, and a segregated and signalled right of way) give rail freight particular strengths for transits which involve:
- Large regular volumes – ideally trainloads of typically 500+ tonnes payload;
 - Long hauls – particularly important when both ends of the transit are not directly rail-connected; and
 - Direct rail connection at one end of the transit at least – saving the cost of rail to road transfer and local road collection/delivery.
- G.6.5 Until very recently, coal had long been the dominant commodity on Britain's freight railway – particularly electricity supply industry coal from mine to power station, but also industrial coal to large processing plants such as cement and steel works. In recent decades, with the major decline in deep mining, the pattern of rail movement in Scotland changed significantly – substantially switching away from short hauls from local deep mine to power station, to long hauls, typified by Anglo-Scottish movements of imported (via Hunterston) coal and domestic opencast (largely Ayrshire) coal to English power stations.
- G.6.6 In the regional context, in recent years, the coal market has moved into severe decline, and this has had a particular impact on the GSWL from Ayrshire through Thornhill, Dumfries and Eastriggs to Carlisle – along which infrastructure capacity was substantially enhanced 5-10 years ago, but whose coal traffic levels are now substantially reduced.
- G.6.7 In the case of traditional bulk rail traffics – such as coal, cement, oil, aggregates, etc. – rail's high-volume movement, direct from private siding to private siding (with no road legs involved) can be very competitive with road haulage, even over relatively short distances. Currently there are no bulk rail freight terminals in the SWestrans area, although timber from the south of Scotland is loaded to rail at a railhead in Carlisle.
- G.6.8 The non-bulk (or 'unitised') rail freight business in Scotland is overwhelmingly dominated by the intermodal load-carrying method, i.e. in containers – typically through multi-user hub or regional railheads, with local collection / delivery by road from the traffic origin / destination. Currently there are no intermodal railheads in the SWestrans area, the nearest being within Central Scotland at Coatbridge, Grangemouth and Mossend. A small railhead in Carlisle handles bulk and non-bulk traffics on an irregular basis, but not in containers.
- G.6.9 Over the past twenty years there have been a range of studies / initiatives to develop rail freight facilities in the SWestrans area. The majority involved rail linkage of sites with specific existing or planned manufacturing / processing activities on site, playing to rail strengths where a road collection is not required. None have been realised, demonstrating the difficulty of turning rail potential into reality, even when relatively large volumes of traffic are on offer on site or in the immediate catchment area. Those sites known to have been investigated are:
- **Maxwelltown (1):** handling wood chip from local saw mills for rail transport to the Shotton Paper mill in north east Wales. The project was abandoned when Shotton Paper moved to 100% recycled fibre rather than virgin material.

- **Maxwelltown (2):** In the late 1990s it was planned to reinstate the rail connection to the BP oil distribution depot on the short branch line from Dumfries to Maxwelltown, as part of a Freight Facilities Grant-assisted project encompassing rail handling facilities at the Grangemouth refinery and various railheads across Scotland and near Carlisle. This element of the rail project was not pursued and the track has been removed and the solum converted into a walkway and cycle path.
 - **Steven's Croft (Lockerbie):** The forest industry development site here was designed specifically so that rail connection to the WCML could be provided. The key players on site established the Lockerbie Railfreight Company, and between 2000 and 2003 various consultancy studies were undertaken in preparation for the submission of a Freight Facilities Grant application to the Scottish Executive.
 - In 2002, following difficulties in generating a positive response from the rail industry, initial feasibility work began on a wood and waste fired power station which would occupy part of the site of the proposed intermodal railhead and would have a major impact on the balance of transport demand on site. In early 2003, the rail project was put on hold, pending the outcome of a full feasibility study of the power station concept. The latter subsequently was given the go-ahead, the Lockerbie Railfreight Company was wound up, and the access embankment from the WCML was removed. A significant proportion of the proposed railhead site is now occupied by the power station, with most of the remaining land used for timber storage and related activities. Rail prospects almost certainly now depend on any future Phase 2 Steven's Croft development, with rail access built in.
 - **Beattock:** rail connection to the East West Haulage freight depot adjacent to (and east of) the WCML, to handle timber and other commodities. The scheme has not proceeded.
 - **Chapelcross:** handling organic waste material from various cities for conversion to energy pellets to supply power stations. The site development did not proceed.
 - **Quintinshill:** railhead / rail access from West Coast Main Line for proposed nearby Canonbie coking coal mine. The mine project is in abeyance following the drop in world coal prices.
 - **Eastriggs (Ministry of Defence sidings):** potential rail-served spoil destination for mined material from the proposed Canonbie coking coal mine near Quintinshill. The mine project is in abeyance following the drop in world coal prices.
- G.6.10 The above illustrate the difficulty in establishing rail freight facilities in a rural area, both where speculative or pre-existing on-site, traffic-generating, developments are involved. A fundamental lesson which can be drawn is that on-site, traffic-generating sources are a necessary – but not sufficient – condition for the realisation of rail freight opportunities. Substantial volumes, and often lengthy hauls, are key.
- G.6.11 It is understood that there are no existing or planned major manufacturing or processing activities at or close to the potential re-opened passenger station at Beattock.
- G.6.12 The concept of a direct rail connection into the East West Haulage depot north of the original Beattock station site (and immediately to the east of the WCML) was investigated around five years ago. The key traffic envisaged was timber – understood to be both inbound timber (from the Highlands for example) for delivery by road to the Steven's Croft complex in Lockerbie, and outbound timber from the surrounding catchment destined for longer-haul destinations such as Kronospan at Chirk, on the English/Welsh border. The project has however fallen into abeyance. The project could be resurrected in the future, but would represent a less satisfactory overall rail solution than direct connection to any future Steven's Croft Phase 2 development, although it may precede the provision of an on-site facility at Steven's Croft.

Conclusion

Because of the wider generic mis-match between passenger station and freight railheads on the modern railway, there is no potential for a dual-use freight-passenger facility at Beattock. While there are no likely synergies, there are however potential conflicts between the siting of a passenger station and its operational impact on:

- (a) the existing freight loops used to take trunk freight trains off the main running lines, to permit uninterrupted passage of high-speed passenger trains immediately north of the original station; and
- (b) any future rail connection to the East-West Haulage site.

These should be taken into account in appraisal of Beattock passenger station site development options.

G.7 Potential Timetable

G.7.1 Beattock is located on the West Coast Main Line (WCML), between Carstairs and Gretna Junction, which is not served by any ScotRail services. The provision of a train service to serve Beattock station would require other train operators to provide the call or a completely new ScotRail service. Both of these options are explored here.

Policy Context

G.7.2 The Scottish Government policy for railways is still contained in “Scotland’s Railways” which was published in 2006.

G.7.3 The key Strategic Outcomes (Chapter 7) are stated as:

- Improving Journey times and connections;
- Improving quality, accessibility and affordability; and
- Reducing emissions.

G.7.4 In this context it is the first two that chiefly come into play.

G.7.5 Additionally, in Chapter 8 (Implementation Plan) there are two relevant policy statements in Paragraph 8.8:

- Short term:
 - Reduce fastest journey time from Glasgow to London to 4 hours 15 minutes through implementation of the West Coast Upgrade.
- Medium term:
 - 4-hour fastest journey times from Edinburgh and Glasgow to London; and
 - 3-hour fast through services to Manchester and the North West.

G.7.6 These are reinforced by a general theme that runs through the document which is to improve journey times on the key Scottish internal inter-city journeys by reducing calls at smaller intermediate stations and to develop good quality interchanges at key stations to link with local feeder services.

G.7.7 From this it can be inferred that the general thrust of policy is towards providing bespoke local services for smaller stations along trunk routes which can help to provide reduced journey times for the long distance journeys between the major cities.

G.7.8 The following sections need to be considered in this policy context.

Existing Services

G.7.9 There are only two train operators whose trains pass Beattock station during daylight hours: **Virgin Trains** (VT) and **TransPennine** (TPE). VT operates London Euston to Glasgow services both via the fast Trent Valley route and via Birmingham, and also London Euston via Birmingham to Edinburgh services. TPE operate services between Manchester Airport/Manchester Piccadilly and both Glasgow and Edinburgh.

G.7.10 Both operators are franchised by the Department for Transport (DfT) who would need to agree and then specify the inclusion of any new stations or calls in these two franchises.

G.7.11 Initial dialogue took place with TPE who provide the bulk of the service at Lockerbie, followed by dialogue with VT.

TransPennine (TPE) Engagement

G.7.12 TPE have developed the Manchester based services on the WCML since they took over in 2008. They have been the primary service provider for Lockerbie since then although VT also provides a limited number of calls. Their current timetable will change in May 2018 with further changes in December 2019 when their new rolling stock (New CAF build class 397 Civity EMUs – 5 x 24m units) is introduced into service, along with additional Liverpool - Glasgow services. (Given the expansion in train services and also in train length it may be that these trains need to be lengthened in the future to cater for demand.)

G.7.13 TPE provided a draft May 2018 timetable to illustrate their points. This has been used as the base for Table G.1.

G.7.14 Their observations were that the current path from Manchester International Airport to Edinburgh is tightly constrained. In the Down direction, the move across Carstairs South Junction needs to take place in front of the xx40 Glasgow – London Virgin train, and then the path from Midcalder Junction to Edinburgh needs to be in front of the ScotRail local service via Shotts. This creates a very small time window and missing the Carstairs crossing would result in following the local services and a much later arrival into Edinburgh.

G.7.15 Clearly, timetable changes on WCML (possibly post re-letting the current VT franchise) and also ScotRail's post-electrification timetable changes on the Shotts line, may change these fixed limitations, but that is currently unknown. The number of intermediate calls in northbound Edinburgh trains is already severely constrained (see Table G.1) and as TPE indicated, "*an additional call at Beattock would not be desirable*", and indeed on the current times would not be able to be accommodated.

G.7.16 In the Up direction, there is a little more flexibility with some spare time at Carlisle, but the interrelationship with the GSWL services, particularly now their frequency has been increased (as part of the December 2017 timetable changes), it is too close for comfort and any spare time could easily disappear.

G.7.17 The Manchester International Airport to Glasgow service is also subject to similar limitations. In the Down direction they coincide with the GSWL departures from Carlisle, which in current circumstances they need to follow. This gives them a good path (with no wasted time) to the slot they now need in the south Glasgow area with the additional Motherwell call. (The Glasgow services

are being revised to meet a longstanding gap in the service by providing calls at Motherwell, which has not had a viable long distance WCML service for many years).

- G.7.18 TPE's market based view is that their services are long distance high-speed services. They have largely succeeded in competing for and capturing the air market between Edinburgh/Glasgow and Manchester/Liverpool with their close to three-hour end-to-end journey time and frequent service. But the largely uncongested road alternative offers strong competition and TPE are clearly very sensitive to any increases in journey time. Additional speculative calls at new and small wayside stations are not part of their concept.
- G.7.19 The inclusion of Motherwell calls in Glasgow services (clearly commercially a much better case than Beattock) has been with some difficulty and has taken several years to achieve. The idea of calls at Carstairs has been promoted and Carnforth would be another similar and probably more attractive potential call as well.
- G.7.20 The new Liverpool – Glasgow services are intended to be free-standing – as the attach/detach time at Preston had then been run as portions of existing Manchester International Airport to Glasgow trains would be detrimental to achieving the competitive through journey times they require as well as introducing reliability risks. Combining the services would also reduce the ability for stops to be shared among the different trains, which will deliver further journey time reductions whilst enabling TPE to deliver the DfT's requirement for intermediate calls at stations in northwest England. These extra trains are seen as part of the core service and are not available to make additional calls at existing or new stations.
- G.7.21 Class 397s are capable of 125mph may be able to shave a little time off the current class 350 110mph timings, but currently no "non-tilt" speeds of more than 110 mph are available on the WCML, so this is still to be delivered by Network Rail.
- G.7.22 The only way a call at Beattock could be accommodated would possibly be at the expense of a Lockerbie call, but this would significantly reduce the service provided at Lockerbie, especially as it has not been possible to provide an hourly service.

Virgin Train (VT) Engagement

- G.7.23 The current Virgin Trains services to and from Glasgow and Edinburgh are also long distance high speed services, where the key London and Birmingham markets are contested with air, so minimising journey time is a key driver to service specification. Only 4 out of 23 southbound trains passing through call at Motherwell, predominately early morning, with a similar number northbound, but three call after 21 00.
- G.7.24 Lockerbie has a similarly limited service with only 3 calls southbound out of 30 trains passing, with the same number northbound, again skewed towards late early south and late north services. The only "local" provision is for travel from Lockerbie to Glasgow for work or education with an 09 12 arrival in Glasgow and a 17 40 departure.
- G.7.25 Given the limited provision by Virgin Trains of services to the existing intermediate stations with their established travel markets it is unlikely the Virgin Trains would wish to provide a range of calls at a re-opened Beattock station

Wider Issues

- G.7.26 Notwithstanding the current difficulties in finding services that could call at Beattock, the arrival of HS2 services, planned for 2027 with their non-tilting trains will create a further challenge to timetabling as these trains are planned to have the minimum of calls once they leave the High Speed Line at Crewe. This is to compensate for the extended journey times that will arise compared with the current Virgin Pendolinos tilting trains. The likelihood is that there will be more long distance

services on the WCML with a range of speed profiles and stopping patterns, but all of which will predominantly be aimed at long distance travel, seeking minimum journey times.

Existing Services - Summary

G.7.27 There is little prospect of adding additional calls into the existing services passing Beattock. Going forward there are further imponderables:

- The re-letting of the West Coast franchise may result in trains being re-timed and remove the key constraint at Carstairs; and
- The restructuring of the ScotRail services via Shotts post electrification planned for May 2019 may also offer beneficial changes. Conversely these changes could make the TPE services less easy to plan, with new conflicts developing.

G.7.28 In these circumstances it will not be possible to develop a timetable based on the existing service pattern that would stand some chance of operating in the future.

G.7.29 Consequently, “notional” timetable options have been developed using TPE which is indicative of what could possibly be the case - noting the caveats and policy implications are not supportive of this solution and that no attempt has been made to resolve timetable conflicts in the current timetable.

Shorter Term Strategy: Notional calls using TPE trains

G.7.30 Notional calls by TPE trains are shown in Table G.1 and illustrate the difficulties in providing a usable service with TPE. The service has been based on creating peak travel opportunities for work or education into Glasgow, Edinburgh and Carlisle and then providing for both inward and outward social, personal and leisure travel. Calls have not been added to services which currently do not call at Lockerbie as the current omission of these Lockerbie calls indicates difficulties in delivering viable paths, which would be made worse by adding additional calls.

G.7.31 This notional timetable offers six trains a day in each direction, all except one (the 18:13 from Edinburgh) serve Glasgow Central. There is a morning connection into a ScotRail train at Carstairs to provide access to Edinburgh for work or education.

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Table G.1: Appraisal Current TPE services with notional Beattock calls - 2 hourly

Manchester Airport		06:10	07:10	08:10	09:10	10:10	11:10	12:10	13:10	14:10	15:10	16:10	17:10	18:10	19:10	20:10	21:05
Manchester Picadilly	05:00	06:26	07:26	08:26	09:26	10:26	11:26	12:26	13:26	14:26	15:26	16:26	17:27	18:26	19:26	20:26	21:22
Preston	05:40	07:03	08:03	09:03	10:04	11:03	12:04	13:03	14:04	15:03	16:03	17:03	18:03	19:04	20:04	21:04	22:03
Calls at	L,O,P	L,O	L,P		L,O,P		L,O,P	L,O	L,O,P	L,O,P	L,O,P	L,O,P	L,O,P	L,O,P	L,O,P	L,O,P	L,O,P
Carlisle	05:52	08:12	09:11	10:07	11:15	12:06	13:17	14:12	15:15	16:13	17:15	18:14	19:16	20:16	21:18	22:16	23:18
Lockerbie	07:11	08:30	09:30	10:30	11:37			14:31	15:33		17:33		19:35		21:37	22:34	23:37
Beattock	07:28		09:47					14:48			17:50		19:52			22:51	
Carstairs	07:46																
Motherwell	08:01				12:22		14:22		16:19		18:22		20:22		22:22		
Glasgow Central	08:19		10:29		12:39		14:38		16:39		18:38		20:40		22:38		00:51
Edinburgh	08:34	09:36		11:33		13:24		15:34		17:36		19:42		21:39		23:36	
Edinburgh		06:20		08:11		10:13		12:13		14:18		16:13		18:13		20:14	22:27
Glasgow Central	04:22		07:10		09:06		11:09		13:09		15:09		17:10		18:47		
Motherwell			07:25		09:23		11:24		13:24		15:24		17:25				
Carstairs	05:03																
Beattock			07:52				11:51				15:51		17:52	18:57	19:39		
Lockerbie	05:50	07:14	08:09	09:10	10:08	11:11	12:08	13:11	14:08	15:16	16:08	17:11	18:09	19:14	19:56	21:13	23:27
Carlisle	06:13	07:34	08:30	09:31	10:31	11:31	12:28	13:31	14:29	15:36	16:28	17:32	18:29	19:34	20:28	21:33	23:47
Calls at	P,O,L	P,O,L	P,O,L	P,O,L	P,O,L	P,O,L	P,O,L	P,O,L	P,O,L	O,L	P,O,L	P,O,L	P,O,L	P,O,L	P,O,L	O,L	P,O,L
Preston	07:44	08:46	09:45	10:45	11:46	12:45	13:46	14:45	15:46	16:46	17:46	18:46	19:46	20:46	21:41	22:44	00:59
Manchester Picadilly	08:24	09:24	10:24	11:23	12:21	13:24	14:24	15:24	16:24	17:24	18:23	19:24	20:24	21:24	22:22	23:24	01:31
Manchester Airport	08:39	09:40	10:39	11:39	12:40	13:39	14:39	15:39	16:39	17:39	18:39	19:39	20:39	21:41	22:38	23:39	01:46
P,O,L - Penrith, Oxenholme, Lancaster																	

Longer Term Strategy: West Coast Main Line local service

- G.7.32 Table G.2 shows a notional local Stirling – Carlisle train timetable that has been developed in line with the Scotland Route Study long term proposals for 2043. This has been developed from the concept developed during the Part 1 Appraisal stage.
- G.7.33 The key focus has been on securing viable connections to and from Glasgow at Motherwell, linking with the existing Glasgow – Lanark services. This does not provide a link to Edinburgh but that could be offered at Carstairs by integrating with a Carstairs – Edinburgh connectional service, which is included and is timed to provide calls at stations between Kirknewton and Slateford (Inclusive) to improve its value. This might be part of a wider South Lanarkshire to/from Edinburgh service, but the more interlinked services are, the more difficult it is to develop a usable and robust timetable for a specific need.
- G.7.34 Such a “cross-country” type service (cross-country in the context that it does not serve any of the major cities) will serve a number of different markets. In this case initial examples are:
- Stirling - Falkirk – Cumbernauld – Coatbridge – Motherwell (Hamilton) which was a proposal contained in the *Central Scotland Transport Corridor Study (Executive Decision 6)* published in January 2003;
 - Provision of connections from the Stirling/Falkirk/Cumbernauld/Coatbridge areas into long distance services at Carlisle, thus avoiding connections in Edinburgh or Glasgow as proposed in the Scotland Route Study published in July 2016;
 - Provision of long distance connections from Motherwell and South Lanarkshire into long distance services at Carlisle without having to double back via Glasgow Central;
 - The opportunity to provide new rail services to the smaller communities of Upper Clydesdale and Upper Annandale through which the railway currently passes but which have no stations; and
 - The possibility of removing calls from long distance services at Lockerbie to reduce journey times and replacing them with calls at Lockerbie in this new feeder service. (But this may result in a reduction in the train service offer at Lockerbie).
- G.7.35 The key point is that it is unlikely that the Business Case for any one of these specific areas will be strong enough to support a new service, but in aggregate they might be.

G.8 Overall Conclusions

- G.8.1 It is clear from the discussion above that the short term issues for the provision of a train service to call at a re-opened Beattock station are challenging, as there are implications to other train services.
- G.8.2 Realistically it is unlikely that there will be any calls at a new Beattock Railway Station in the revised TransPennine services. The pressures are on reducing journey times to compete effectively with air travel and any extra station calls are more likely to favour Motherwell as this is likely to generate significantly more passengers.
- G.8.3 A train service for Beattock is therefore more likely to be delivered in the longer term by the defined Scotland Route Study Stirling – Coatbridge – Motherwell – Carlisle ‘opportunity to travel’, which will be slightly less time critical. The big questions are:
- How quickly can such a service be delivered and the re-opening of Beattock Railway Station be allied to that?; and

- What sources of funding are available to support the development of the station?
- G.8.4 It should be noted that, as a principle, the concept of cross border local services has already been accepted by Scottish Government as witnessed by their support for the stations at East Linton and Reston and the associated local Edinburgh – Berwick local service.
- G.8.5 The wider generic mis-match between passenger station and freight railheads on the modern railway, means there is no potential for a dual-use freight-passenger facility at Beattock, and there are potential conflicts between the siting of a passenger station and its operational impact on freight operations which should be taken into account in any further development of a passenger station.
- G.8.6 The outcome of the timetable examination is:
- That it has not been possible to offer a plausible train service using the existing (May 2018) train services;
 - There may be opportunities to provide train services that could call at Beattock, but this will be in the longer term and part of a wider requirement, as envisaged in the Scotland Route Study; and
 - Notional train services have been prepared for appraisal purposes only.

Table G.2: Possible timings for a Stirling - Carlisle (and return) service (EMU)

Carlisle	dep	06 20	08 20	10 20	12 20	14 20	16 20	18 20	20 20	
Lockerbie	dep	06 40	08 40	10 40	12 40	14 40	16 40	18 40	20 40	
Beattock	dep	06 57	08 57	10 57	12 57	14 57	16 57	18 57	20 57	
Carstairs	dep	07 22	09 22	11 22	13 22	15 22	17 22	19 22	21 22	
Carstairs	connection dep	07 35	09 30	11 30	13 30	15 30	17 30	19 30	21 30	<i>Notional new service</i>
Edinburgh	connection arr	08 20	10 15	12 15	14 15	16 15	18 15	20 15	22 15	
Carlisle	dep	07 32	09 32	11 32	13 32	15 32	17 32	19 32	21 32	
Motherwell	arr	07 39	09 39	11 39	13 39	15 39	17 39	19 39	21 39	
	connection dep	07 44	09 45	11 48	13 48	15 48	17 49	19 48	21 48	<i>Current Lanark services</i>
Glasgow	connection arr	08 09	10 12	12 14	14 15	16 15	18 15	20 16	22 12	
Whifflet	arr	07 47	09 47	12 17	14 17	16 17	18 17	20 17	22 17	
Cumbernauld	arr	07 56	09 56	12 26	14 26	16 26	18 26	20 26	22 26	
Larbert	arr	08 06	10 06	12 36	14 36	16 36	18 36	20 36	22 36	
Stirling	arr	08 16	10 16	12 46	14 46	16 46	18 46	20 46	22 46	
Stirling	dep	05 47	07 47	09 47	11 47	13 47	15 47	17 47	19 47	
Larbert	dep	05 57	07 57	09 57	11 57	13 57	15 57	17 57	19 57	
Cumbernauld	dep	06 07	08 07	20 07	12 07	14 07	16 07	18 07	20 07	
Whifflet	dep	06 16	08 16	10 16	12 16	14 16	16 16	18 16	20 16	
Glasgow	connection dep		07 52	09 50	10 54	13 50	15 50	17 50	19 50	<i>Current Lanark services</i>
Motherwell	connection arr		08 19	10 17	11 19	14 17	16 17	18 17	20 13	
Motherwell	dep	06 24	08 24	10 24	12 24	14 24	16 24	18 24	20 24	
Carlisle	dep	06 31	08 31	10 31	12 31	14 31	16 31	18 31	20 31	
Edinburgh	connection dep	05 45	07 50	09 50	11 50	13 50	15 50	17 50	19 50	<i>Notional new service</i>
Carstairs	connection arr	06 30	08 35	10 35	12 35	14 35	16 35	18 35	20 35	
Carstairs	dep	06 41	08 41	10 41	12 41	14 41	16 41	18 41	20 41	
Beattock	dep	07 06	09 06	11 06	13 06	15 06	17 06	19 06	21 06	
Lockerbie	dep	07 23	09 23	11 23	13 23	15 23	17 23	19 23	21 23	
Carlisle	arr	07 43	09 43	11 43	13 43	15 43	17 43	19 43	21 43	
<i>This requires 3 units for a 2 hourly service</i>										
<i>Based around good connections to/from Glasgow at Motherwell</i>										

Appendix H Part 1: Affordability - Option 6 – Station Costs and Patronage

H.1 Station Costs

Table H.1: Costs for recently constructed or soon to be built stations

Station	Status	No. of platforms and length	Electrified	Footbridge	Car Park	Estimated Cost	Outturn Cost	Comment
New Court	Opened June 2015	One 124m	No	No	No (4 disabled)	£1.44m	£2.2m	Cost increase due to extra signaling work
Lea Bridge	Opens May 2016	Two	Yes	Yes, lifts	No	£6.5m	£11.6m	Re-opening – existing platforms used
Ilkeston	To open autumn 2016	Two	No	Yes, ramps	Yes 90 spaces	£6.5m	£9.6m	Much delayed by Great Crested Newts and flooding issues
Pye Corner	Opened Dec 2014	One 145m	No	No	Yes 62 spaces	£3.5m		Built (not by Network Rail) in 8 months so assume prices as budget. Provision for 2nd platform
Apperley Bridge	Opened Dec 2015	Two 100m	Yes	Existing new steps / ramps	Yes 297 spaces	£16m for the two	£16.9 max	Park & Ride
Kirkstall Forge	Opened June 2016	Two 100m	Yes	Yes, lifts	Yes 120 Spaces	£16m for the two	£16.9 max	Regeneration site
Low Moor	Planned for May 2017	Two 96m	No	Yes, lifts	Yes 128 spaces	£10.5m		Ground conditions, due to mining have created costs
Kenilworth	Planned in CP5	Two 100m	No			£11m	N/A	
Bermuda Park	Jan 2016	Two 75m	No	Underpass, ramps	Yes 30 Spaces	£13.6m package	£19.2m	Package included Bedworth platform lengthening (to 77m) & new platform at Coventry

Station	Status	No. of platforms and length	Electrified	Footbridge	Car Park	Estimated Cost	Outturn Cost	Comment
Coventry Arena	Jan 2016	Two: 1 x 76m, 1 x 149m	No		Yes 80 spaces	£13.6m package	£19.2m	Package included Bedworth platform lengthening (to 77m) & new platform at Coventry
East Linton and Reston	No date planned	Two, Probably 150m	Yes	Yes	Yes	£21.8m for the pair	N/A	GRIP3 Costs April 2016
Robroyston	No date given	Two At least 120m	Yes	Yes	Yes	Over £14m	N/A	Scottish Station Fund announcement - which will provide 50% of the costs (over £7m), suggesting a cost in excess of £14m.

Data Sources:

Newcourt, Devon: <https://www.gov.uk/government/news/new-144-million-railway-station-to-be-built-in-devon>, <http://www.bbc.co.uk/news/uk-england-devon-33007069>, https://www.google.co.uk/search?q=new+court+station&ie=utf-8&oe=utf-8&gws_rd=cr&ei=EUwhV6T2E-uVgAbF_4awDg#q=new+court+station+planning+application

Lea Bridge, London: <https://www.gov.uk/government/news/new-65-million-railway-station-to-be-built-in-waltham-forest>
<https://branding.walthamforest.gov.uk/Documents/ke134-lea-bridge-station-reopening.pdf>

Ilkeston: http://www.derbyshire.gov.uk/transport_roads/public_transport/news_notices/ilkeston_rail_station/default.asp?VD=ilkestonstation

Pye Corner: <http://www.bbc.co.uk/news/uk-wales-south-east-wales-25962533>, https://en.wikipedia.org/wiki/Pye_Corner_railway_station
http://www.southwalesargus.co.uk/news/11666021.Newport_s_3_5m_Pye_Corner_rail_station_opened_in_record_time/#comments-anchor
<https://www.gov.uk/government/news/new-35-million-railway-station-to-be-built-in-the-ebbw-valley>

Apperley Bridge: <http://www.wymetro.com/ApperleyBridge/>, <http://www.wymetro.com/news/projects/projectdetails/kirkstallforgerail/>

Kirkstall Forge: <http://www.wymetro.com/news/projects/projectdetails/kirkstallforgerail/>, <http://www.wymetro.com/uploadedFiles/WYMetro/Content/news/projects/projectdetails/Local%20Authority%20Major%20Schemes%20-%20Revised%20Full%20Approval%20Form%281%29.pdf>

Low Moor: <http://www.wymetro.com/news/projects/projectdetails/lowmoor/>
http://www.thetelegraphandargus.co.uk/news/11434077.New_railway_station_at_Low_Moor_remains_on_track_as_land_deal_about_to_be_struck/#comments-anchor

Kenilworth: <https://www.gov.uk/government/news/kenilworth-new-station>

Coventry Arena and Bermuda Park: <http://www.bbc.co.uk/news/uk-england-coventry-warwickshire-35341487>, <http://www.bbc.co.uk/news/mobile/uk-england-coventry-warwickshire-16180361>, https://en.wikipedia.org/wiki/Bermuda_Park_railway_station

Laurencekirk: http://news.bbc.co.uk/1/hi/scotland/north_east/8055093.stm

Conon Bridge: http://www.railtechnologymagazine.com/Rail-News/conan-bridge-station-open-after-50-years?utm_medium=email&utm_source=Rail+Technology+Magazine&utm_campaign=2163488_thedailyrailnews+February+2013+Week+3&dm_i=IJS%2c1ADCW%2c4DF2LV%2c4D29L%2c1

Reston and East Linton: <https://www.transportxtra.com/publications/local-transport-today/news/48842/cost-of-new-scots-rail-stations-trebles>

Robroyston: http://www.spt.co.uk/documents/RTP090514_agenda14.pdf, <http://news.scotland.gov.uk/News/Funding-boost-for-proposed-station-at-Robroyston-2b9d.aspx>

- H.1.1 It can be seen that there are a range of costs for the recently built or soon to be built new stations.
- H.1.2 There are a number of stations that are close in design/specification to Beattock:
- Two twin-platform stations on electrified lines in West Yorkshire: **Apperley Bridge** and **Kirkstall Forge**, each costing about £8.5m each. (The published information is £16.9m for both of them.). Both stations have large car parks, but they are also linked into wider development sites;
 - The two platform station at **Low Moor**, which is not on an electrified line, is more expensive at £10.5m, and had ground issues due to mining;
 - **Ilkeston**, with an outturn cost of approximately £9.6m and has had well-publicised difficulties with Great Crested Newts and flooding issues; and
 - **Robroyston** was announced at the end of September 2016 with no final cost, but a Scottish Stations Funds award of over £7m which was for 50% of the cost. This station includes considerable alteration to OLE, with the new OLE standards making their impact.
- H.1.3 Table H.1 suggests outturn costs for these stations in the range **£8m - £14m**.
- H.1.4 It should be noted that:
- The two single platform stations noted in the table at **Pye Bridge** (£3.5m) and **New Court** (£2.2m) are both under half the cost of the two platform stations, but that is reasonable, as not only do they have half the platforms, but they do not require a footbridge.
 - **Pye Bridge** was not built by Network Rail;
 - **New Court** looks good value compared with all the other stations listed, and is more in line with recent Scottish experience, such as:
 - **Laurencekirk** (two 150m platforms, footbridge with steps and ramps) re-opened in May 2009 at a cost of £3m; and
 - **Conon Bridge** (single 15m platform, no footbridge and minimal car parking) which re-opened in February 2013 at a cost of £600k (£0.6m).

Appendix I Part 1: Accessibility Analysis

I.1 Introduction

I.1.1 A lack of direct public transport travel routes was identified as a key problem during the Pre-Appraisal stage of the study. Options 1a and 1b consider improved direct access from Beattock to the railway network, seeking to address the problem. Existing journey times from Beattock to key destinations on the railway network (Lockerbie, Carlisle, Edinburgh and Glasgow) have been considered alongside estimated journey times to these key destinations with the options in place. This appendix Appendix I shows the analysis for the options for:

- An AM trip (made at approximately 08:00);
- A PM trip (made at approximately 17:00); and
- An evening trip (made at approximately 20:00).

I.1.2 For the existing travel time, the travel time has been considered by car, bus only, and by a combination of bus and train.

I.1.3 Analysis of the change in public transport to car travel time differential (i.e. the difference in journey time between a trip by public transport and the same trip by car, in both the existing and option situation) has also been undertaken which considers by how much the options reduce the public transport travel time compared to the car i.e. how much more 'competitive' does the option make public transport.

I.2 Options 1a and 1b – Existing vs. Option Estimated Journey Times

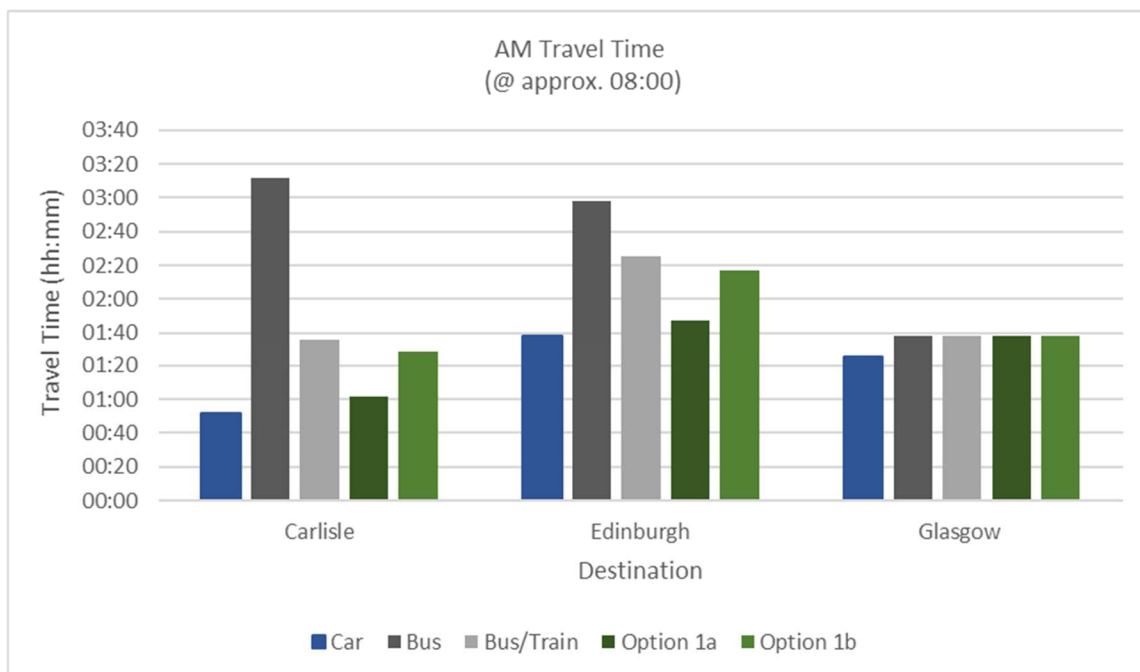


Figure I.1: Options 1a, 1b and 1c – Existing vs. option Journey Times - AM

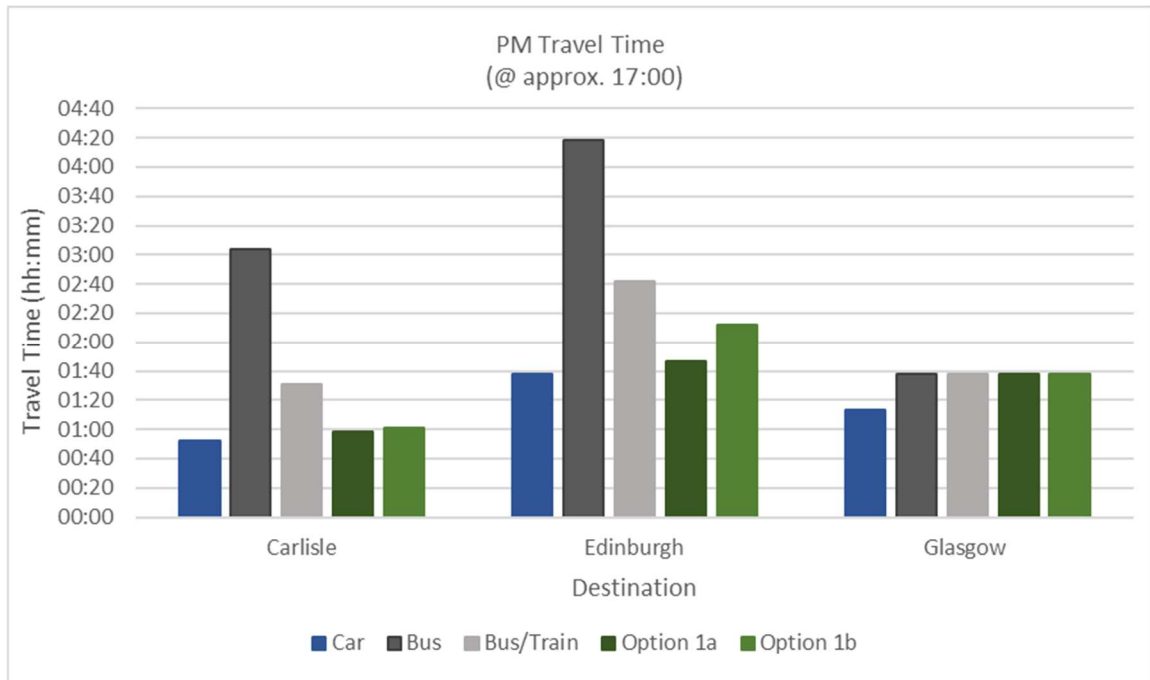


Figure I.2: Options 1a, 1b and 1c – Existing vs. option Journey Times - PM

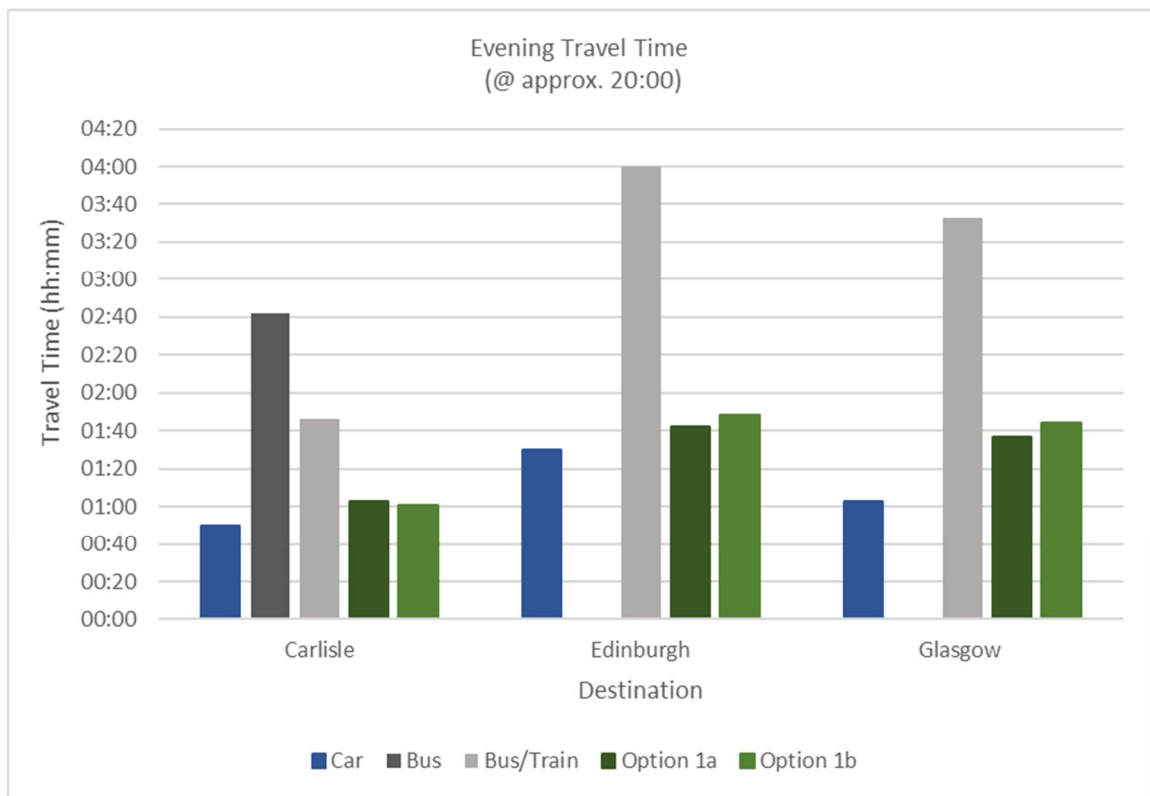


Figure I.3: Options 1a, 1b and 1c – Existing vs. option Journey Times - Evening

Table I.1: Options 1a, 1b and 1c – Public Transport vs. Car travel Time Differential

	Scenario	Public Transport - Car Travel Times			Public Transport - Car Travel Time Difference			Public Transport - Car % Travel Time Difference Reduction		
		Carlisle	Edinburgh	Glasgow	Carlisle	Edinburgh	Glasgow	Carlisle	Edinburgh	Glasgow
AM	Existing	01:36	02:25	01:38		-			-	
	Option 1a	01:02	01:47	01:38	00:34	00:38	00:00	-35%	-26%	0%
	Option 1b	01:28	02:17	01:38	00:08	00:08	00:00	-8%	-6%	0%
PM	Existing	01:31	02:42	01:38		-			-	
	Option 1a	00:58	01:47	01:38	00:33	00:55	00:00	-36%	-34%	0%
	Option 1b	01:01	02:12	01:38	00:30	00:30	00:00	-33%	-19%	0%
Evening	Existing	01:46	04:00	03:33		-			-	
	Option 1a	01:03	01:42	01:37	00:43	02:18	01:56	-41%	-58%	-54%
	Option 1b	01:01	01:48	01:44	00:45	02:12	01:49	-42%	-55%	-51%

I.2.1 The analysis shows:

- Large reductions in the public transport to car journey time differential for:
 - Option 1a for travel to Carlisle and Edinburgh (at all times considered) where:
 - In the AM period the differential between car and public transport journey time to Carlisle is reduced by approximately 35 minutes (such that public transport travel time is only ten minutes longer than the equivalent trip by private car) and reduced by approximately 40 minutes to Edinburgh (such that public transport travel time is around only ten minutes longer than the equivalent trip by private car);
 - In the PM period the differential between car and public transport journey time to Carlisle is reduced by approximately 35 minutes (such that public transport travel time is only six minutes longer than the equivalent trip by private car) and reduced by approximately 55 minutes to Edinburgh (such that public transport travel time around only ten minutes longer than the equivalent trip by private car);
 - In the evening period the differential between car and public transport journey time to Carlisle is reduced by approximately 45 minutes (such that public transport travel time is only 13 minutes longer than the equivalent trip by private car) and reduced by approximately 2 hours 20 minutes to Edinburgh (such that public transport travel time is around ten minutes longer than the equivalent trip by private car);
 - Option 1b for travel to Carlisle and Edinburgh (at all times considered) where:
 - In the AM period the differential between car and public transport journey times to Carlisle and Edinburgh are both reduced by approximately 8 minutes such that public transport travel time is approximately 35 minutes longer (to Carlisle) and 40 minutes longer (to Edinburgh) than the equivalent trip by private car;
 - In the PM period the differential between car and public transport journey times to Carlisle and Edinburgh are both reduced by approximately 30 minutes such that public transport travel time is approximately only 10 minutes longer (to Carlisle) and 35 minutes longer (to Edinburgh) than the equivalent trip by private car);
 - In the evening period the differential between car and public transport journey time to Carlisle is reduced by approximately 45 minutes (such that public transport travel time is only around 10 minutes longer than the equivalent trip by private car) and reduced by approximately 2 hours 10 minutes to Edinburgh

(such that public transport travel time is around 20 minutes longer than the equivalent trip by private car);

- Public transport travel times to Glasgow for both Option 1a and 1b are only improved in the evening period, as during the AM and PM periods, the trip by the existing X74 bus service provides a faster journey time. In the evening period considered, no existing travel solely by bus is possible to Edinburgh or Glasgow and the travel time by bus/train is 4 hours to Edinburgh and around 3 and a half hours to Glasgow. Both Option 1a and 1b reduce the travel time to both destinations to around 1 hour 40 minutes – a reduction in travel time of over 2 hours for trips to Edinburgh and just under 2 hours for trips to Glasgow.

I.2.2 The Pre-Appraisal stage of the study identified the proportion of people aged 16-24 is lower in the study area than the local authority average, suggesting that there may be some out-migration from the area. It was also identified that there are limited direct public transport services to Edinburgh which limits the scope for commuting and travel for leisure, with very limited direct public transport services to Carlisle, limiting journeys to various parts of England, as well as the long bus travel times and poor integration between bus and rail times.

I.2.3 The options would provide a moderate improvement in public transport access to employment and leisure and social opportunities in Carlisle throughout the day and to Edinburgh and Glasgow dependant on the time of day. This would be particularly beneficial to those without access to a car or for whom driving is not possible. In addition, the reduced journey times to Carlisle, Edinburgh and Glasgow may widen the employment opportunities for those resident in the study area. This may reduce out-migration of the younger population and may also support the tourist industry in the area by encouraging increased visitor numbers.

I.3 Option 3: Increased bus services to Edinburgh

I.3.1 Option 3 considers increasing the frequency of service 101/102 with a service every 2 hours during the day and evenings Monday – Sunday. The additional services offer reduced journey times for travel around 11:00, 17:00 and 19:00 where the travel time from Beattock to Edinburgh is reduced by around 10 minutes, 25 minutes and 60 minutes respectively, when compared to the existing situation.

I.3.2 The Pre-Appraisal stage of the study identified the proportion of people aged 16-24 is lower in the study area than the local authority average, suggesting that there may be some out-migration from the area. It was also identified that there are limited direct public transport services to Edinburgh which limits the scope for commuting and travel for leisure.

I.3.3 The option would provide a minor improvement in public transport access to employment and leisure and social opportunities in Edinburgh dependant on the time of day of travel. This would be particularly beneficial to those without access to a car or for whom driving is not possible. In addition, the reduced journey times Edinburgh may widen the employment opportunities for those resident in the study area. This may reduce out-migration of the younger population and increasing the accessibility of the area from Edinburgh may encourage increased visitors to the area, supporting the local tourist industry.

I.4 Option 6 – Existing vs. Option Estimated Journey Times

I.4.1 Car travel times, existing public transport travel times and estimated public transport travel times if Beattock Railway Station were to be re-opened have been compared for trips from Beattock to:

- Carlisle;
- Edinburgh; and
- Glasgow.

I.4.2 It was assumed that, as per the options development, a train timetable; at Beattock has been designed such that stops at Beattock have been included to both Edinburgh and Glasgow on alternating services and stops at Beattock spread across the day with alternating stops at Lockerbie i.e. with the altered service not stopping at Lockerbie if it stops at Beattock.

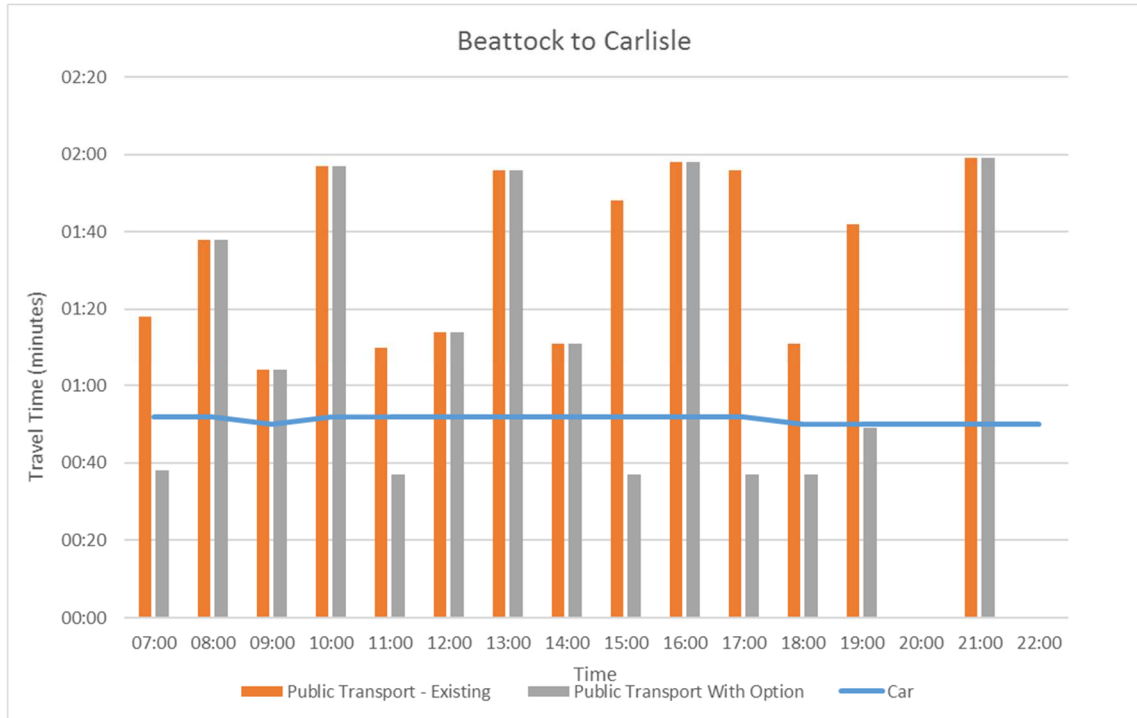


Figure I.4: Options 6 – Existing vs. Option 6 Journey Times – Beattock to Carlisle

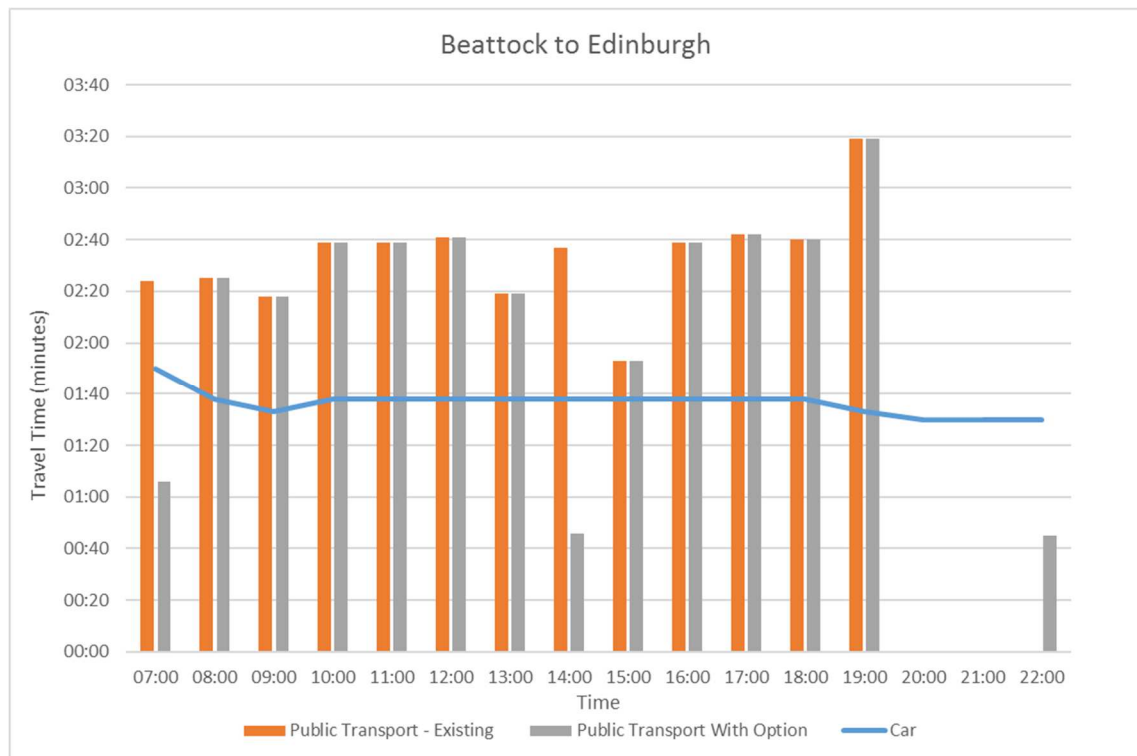


Figure I.5: Options 6 – Existing vs Option 6 Journey Times – Beattock to Edinburgh

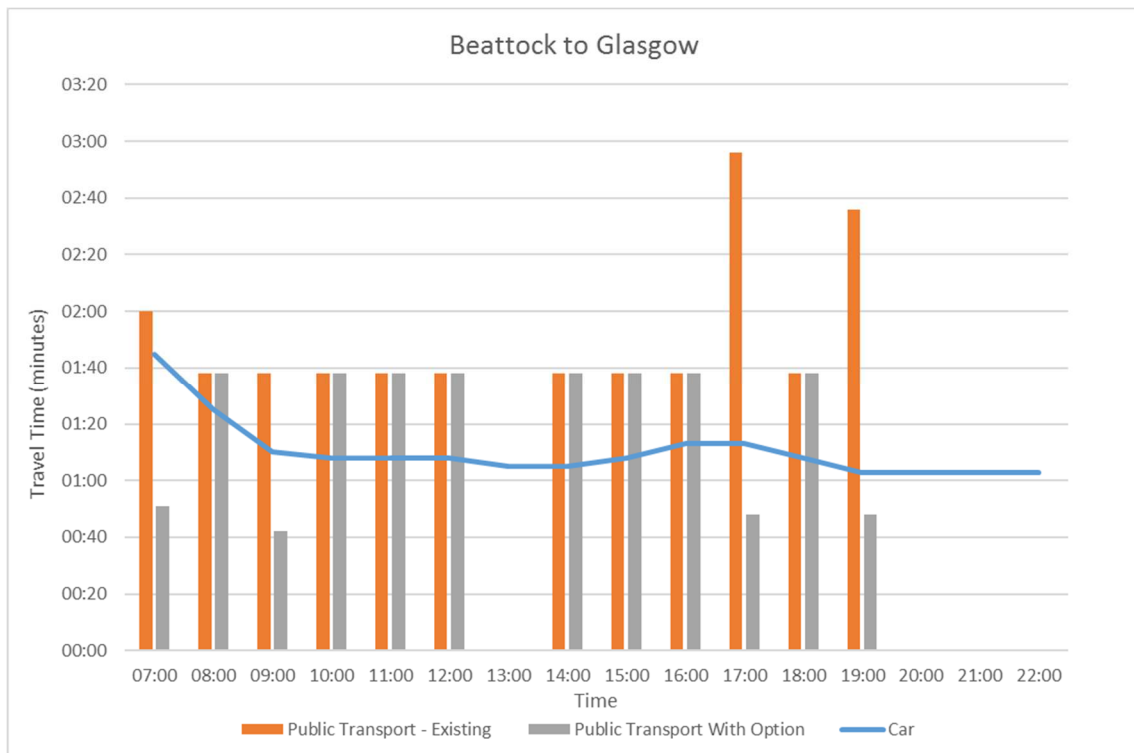


Figure I.6: Options 6 – Existing vs. Option 6 Journey Times – Beattock to Glasgow

I.4.3 The results of the analysis show for travel across the day from 07:00 to 22:00:

- For trips to Carlisle:
 - The option provides large reductions in public transport travel time for 6 of the 14 hours considered (up to 70% journey time reduction) where an existing trip by public transport can currently be made;
 - In 6 of the 16 hours considered, the option provides a travel time by public transport which is quicker than the corresponding trip by private car.
- For trips to Edinburgh:
 - The option provides reductions in public transport travel time for 2 of the 14 hours considered (up to 70% journey time reduction) where an existing trip by public transport can currently be made. The largest reduction equates to a reduction of nearly 2 hours in travel time;
 - The option provides new opportunities to travel by public transport between 22:00 and 23:00; and
 - The option only provides a travel time by public transport which is quicker than the corresponding trip by private car for travel for the 3 hours when a rail service is available in the option (between 07:00 – 08:00, between 14:00 – 15:00 and between 22:00 - 23:00).
- For trips to Glasgow:
 - The option provides reductions in public transport travel time for 4 of the 12 hours considered (up to around a 70% reduction in journey time) where an existing trip by public transport can currently be made. The largest reduction equates to a reduction of around 2 hours in travel time;

- The option provides a travel time by public transport which is quicker than the corresponding trip by private car for travel for the 4 hours when a rail service is available in the option (between 07:00 – 08:00, between 09:00 – 10:00, between 17:00 -18:00 and between 19:00 – 20:00).
- I.4.4 The Pre-Appraisal stage of the study identified the proportion of people aged 16-24 is lower in the study area than the local authority average, suggesting that there may be some out-migration from the area. The distance to the nearest railway station was also identified to be limiting travel mode choice which could be constraining the local tourist industry.
- I.4.5 The option would provide a significant improvement in public transport access to employment and leisure and social opportunities in Carlisle, Glasgow and Edinburgh, dependent on the time of travel. This would be particularly beneficial to those without access to a car or for whom driving is not possible and increased access to employment opportunities may reduce out-migration of the younger population. The increased public transport access would also provide greater accessibility for visitors and tourists to the study area.

Appendix J Part 1: Integration Analysis

J.1 Introduction

J.1.1 Analysis to inform the appraisal against the Integration criteria, has focused on transport integration (as opposed to land-use or policy integration) including:

- Potential transport integration benefits between bus and rail modes; and
- The impact of reduced interchange time on journey times by sustainable transport.

J.1.2 Only Options 1a and 1b seek to directly provide integration benefits between bus and rail modes. As such, the integration analysis has focussed on these three options.

J.2 Options 1a and 1b

J.2.1 Option 1 comprises three sub-options:

- Option 1a: Provision of a dedicated direct bus service operating between Beattock, Dumfries Railway Station and Lockerbie Railway Station, integrated to reduce interchange times between bus and rail;
- Option 1b: Extension of the existing Service 246 to include a stop at Dumfries Railway Station – with adjustment of the bus timetable to reduce interchange time between bus and rail arrival/departure times; and

J.3 Existing Situation

J.3.1 In order to understand the integration benefits that may be generated in terms of improved integration between bus and rail modes, current bus and rail timetables have been examined to establish current interchange times at both Dumfries and Lockerbie railway stations for both departing and arriving passengers on the railway network.

J.3.2 Interchange has been considered for:

- Passengers travelling by bus from Beattock and interchanging to rail at Lockerbie Railway Station for services to Edinburgh, Glasgow and the south;
- Passengers alighting at Lockerbie Railway Station from Edinburgh, Glasgow and the south and then travelling onwards by bus to Beattock.

J.3.3 The analysis considers 'access time' i.e. the total travel time from Beattock to a departing train (i.e. an outbound trip), or from an arriving train back to Beattock (an inbound trip) and considers bus travel time, any walk time required between bus stop and railway station and any wait time (either at the station for outbound trips) or at the appropriate bus stop (for inbound trips).

J.3.4 Figure J.1 to Figure J.6 show how **existing** bus services to and from Beattock integrate with rail departure times from Lockerbie Railway Station. The figures include time spent on the bus, walking between station and bus stop and additionally time spent waiting at the station or bus stop.

J.3.5 Figure J.1, Figure J.2 and Figure J.3 illustrate journey time breakdowns for outbound trips from Beattock to the south, Edinburgh and Glasgow via Lockerbie Station. Key points from the analysis are:

- Bus travel time of circa 30 minutes from Beattock to Lockerbie;

- Walking time of circa two minutes from the existing bus stop on Bridge Street to Lockerbie Railway Station;
- Bus services often align poorly with rail departures from Lockerbie station, with waiting times in Lockerbie as follows:
 - 6 minutes to 2 hours 10 minutes for rail departures to the south;
 - 40 minutes to 3 hours 30 minutes for rail departures to Edinburgh; and
 - 9 minutes to 3 hours 10 minutes for rail departures to Glasgow.
- Bus services only operate from Beattock from circa 07.20 to 18.30, meaning that Beattock residents cannot access the first 2 rail departures to the south, or first northbound departure to Glasgow; and
- As a result, interchange time makes up a significant proportion of total 'access' journey time to Lockerbie of 56%, 69% and 57% for trips to the south, Edinburgh and Glasgow respectively.

J.3.6 Figure J.4, Figure J.5 and Figure J.6 illustrate that at present for inbound trips from Lockerbie Station to Beattock:

- Bus and walk times are as per outbound leg;
- Bus services are again focussed on the centre of the day, and there is no bus connection to Beattock for the last five rail arrivals from the south, last two from Edinburgh and last three from Glasgow.
- As such wait times vary strongly across the day from:
 - Three minutes to one hour following rail arrivals from the south;
 - 15 minutes to one hour following rail arrivals from Edinburgh; and
 - 10 minutes to 1 hour 50 minutes following rail arrivals from Glasgow.
- As a result, interchange makes up an average of 44%, 52% and 67% of total journey time from Lockerbie for trips from the south, Edinburgh and Glasgow respectively.

J.3.7 Overall, the analysis shows the existing lack of integration between bus and rail times for many of the rail departures and arrivals.

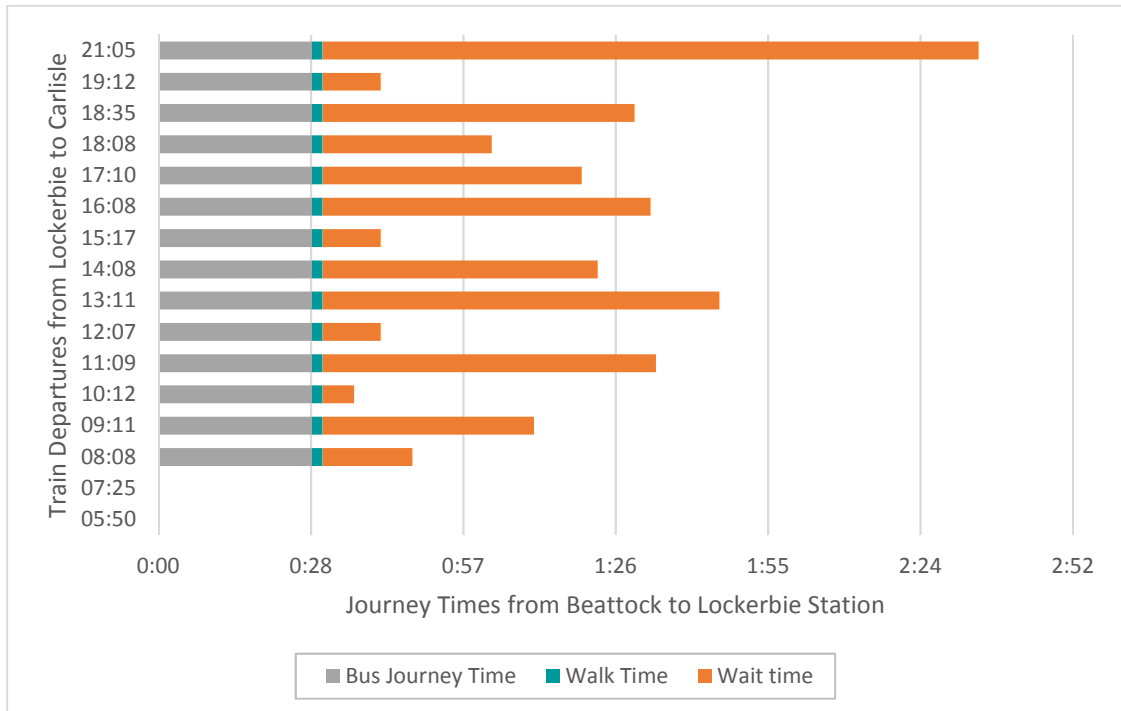


Figure J.1: Total Journey Time from Beattock to Lockerbie Railway Station for onward travel to the south / Carlisle (Current)

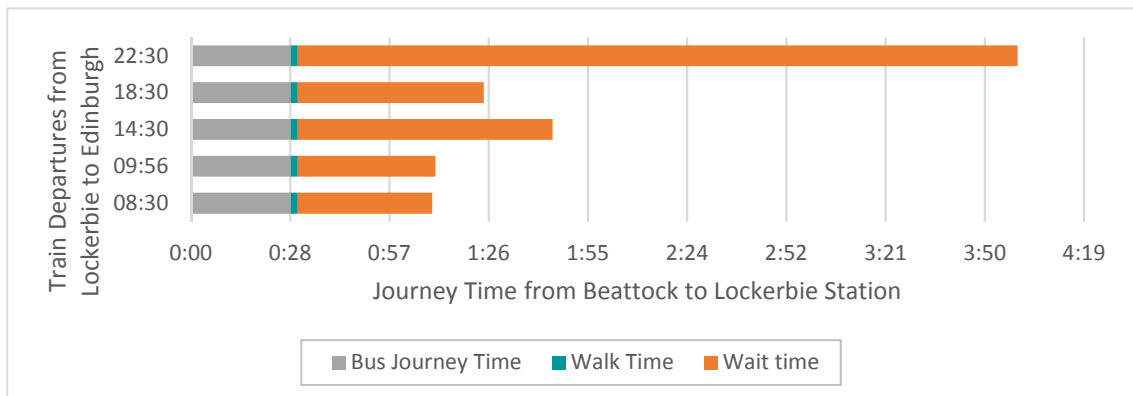


Figure J.2: Total Journey Time from Beattock to Lockerbie Railway Station for onward travel to Edinburgh (Current)

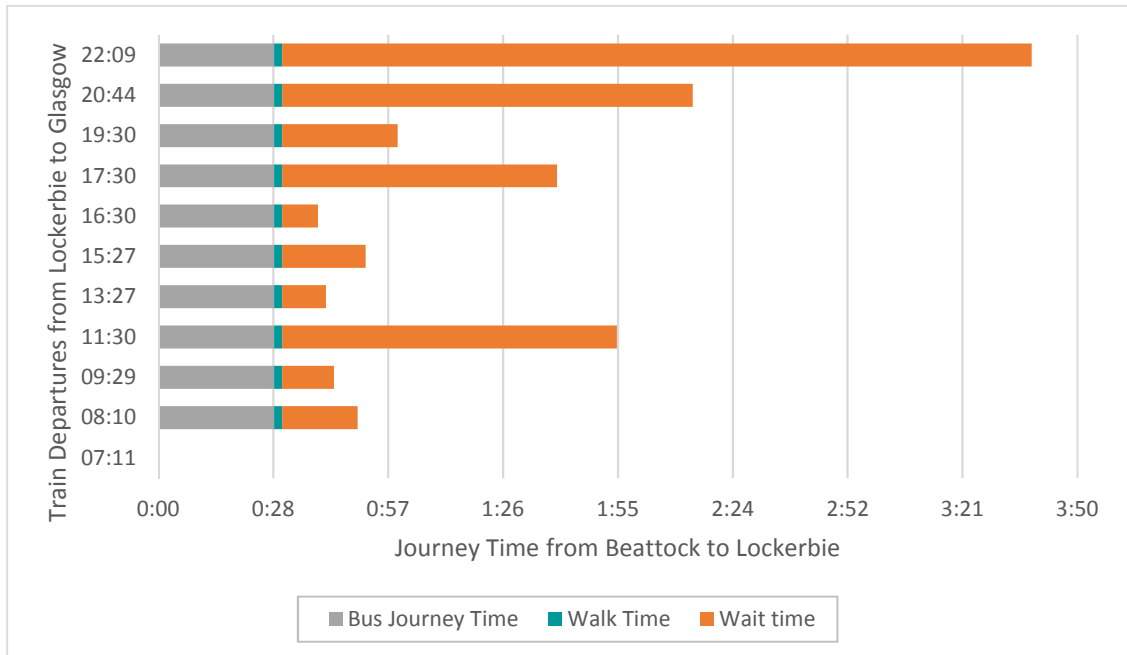


Figure J.3: Total Journey Time from Beattock to Lockerbie Railway Station for onward travel to Glasgow (Current)

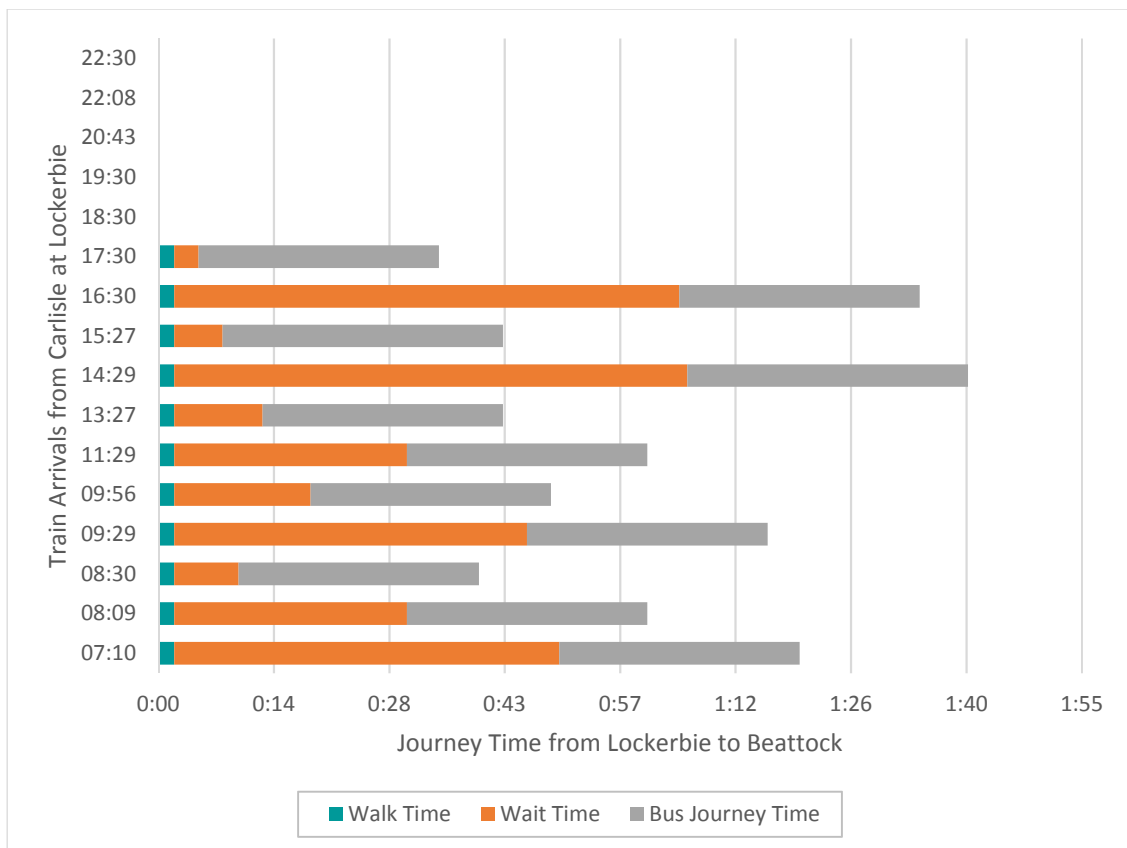


Figure J.4: Total Journey Time from Lockerbie Railway Station to Beattock following arrival from the south / Carlisle (Current)

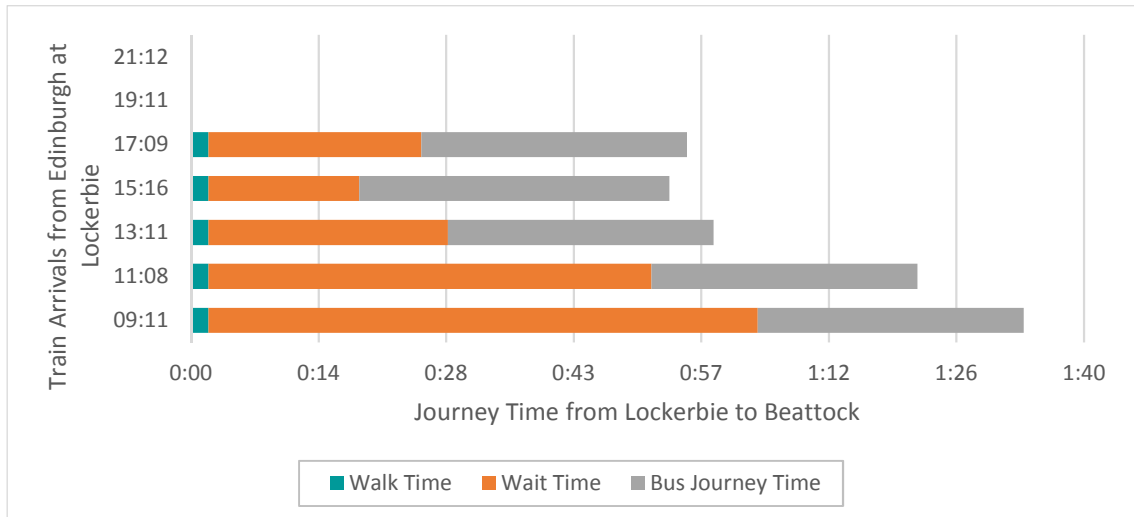


Figure J.5: Total Journey Time from Lockerbie Railway Station to Beattock following arrival from Edinburgh (Current)

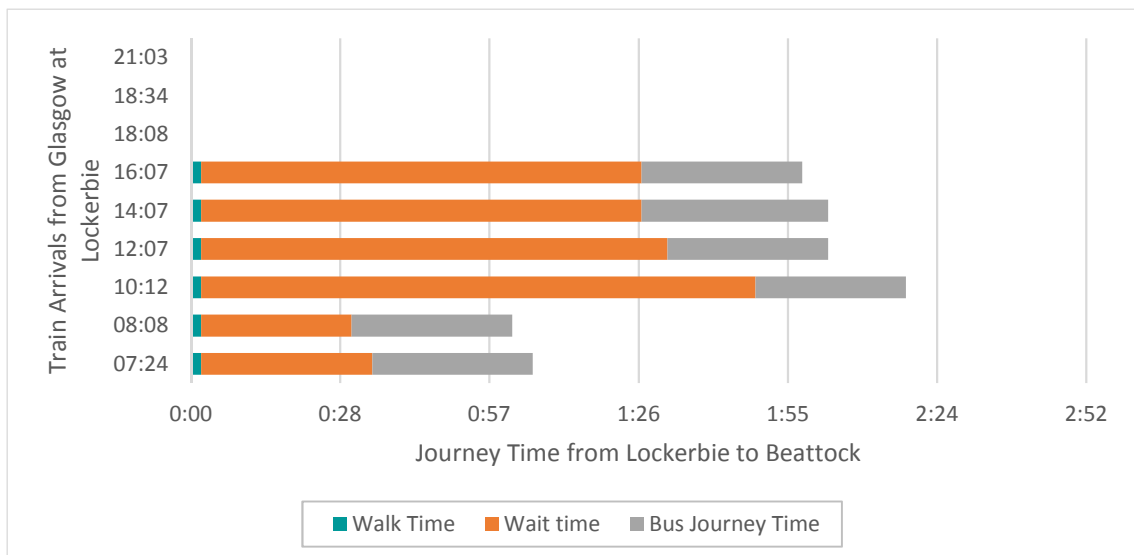


Figure J.6: Total Journey Time from Lockerbie Railway Station to Beattock following arrival from Glasgow (Current)

J.4 Impact of the Options – Methodology

- J.4.1 New bus timetables were produced for each of Options 1a and 1b, aimed at better connecting Beattock residents with rail services at Dumfries and Lockerbie. In the production of these timetables for the proposed options it has been necessary to prioritise connections to specific stations at specific times of day. This means that implementation of an option may have a positive or negative impact on the integration of bus and rail services at a particular time of day.
- 7.4.1 The success of the various options in integration terms has also been assessed against three key metrics:
- Access to additional services to which there was previously no connecting bus service;
 - Total 'access' journey time; and
 - Interchange (wait and walk) time.

J.5 Impact of Option 1a

- J.5.1 Option 1a involves the provision of a new bus service between Beattock and Lockerbie Railway Station, and this option appears to deliver greatest integration benefits.
- J.5.2 For outbound trips from Beattock to the south/Carlisle, Option 1a will:
- Provide access to two additional service per day;
 - Reduce bus time by 3 minutes across the day and remove the need to walk from the station to the stop;
 - Reduce total journey times for all rail services except the 10:12 where journey time increases, but by only three minutes;
 - Yield greatest time savings for the 21:05 and 21:12 services where waiting time is cut by circa 2 hours.

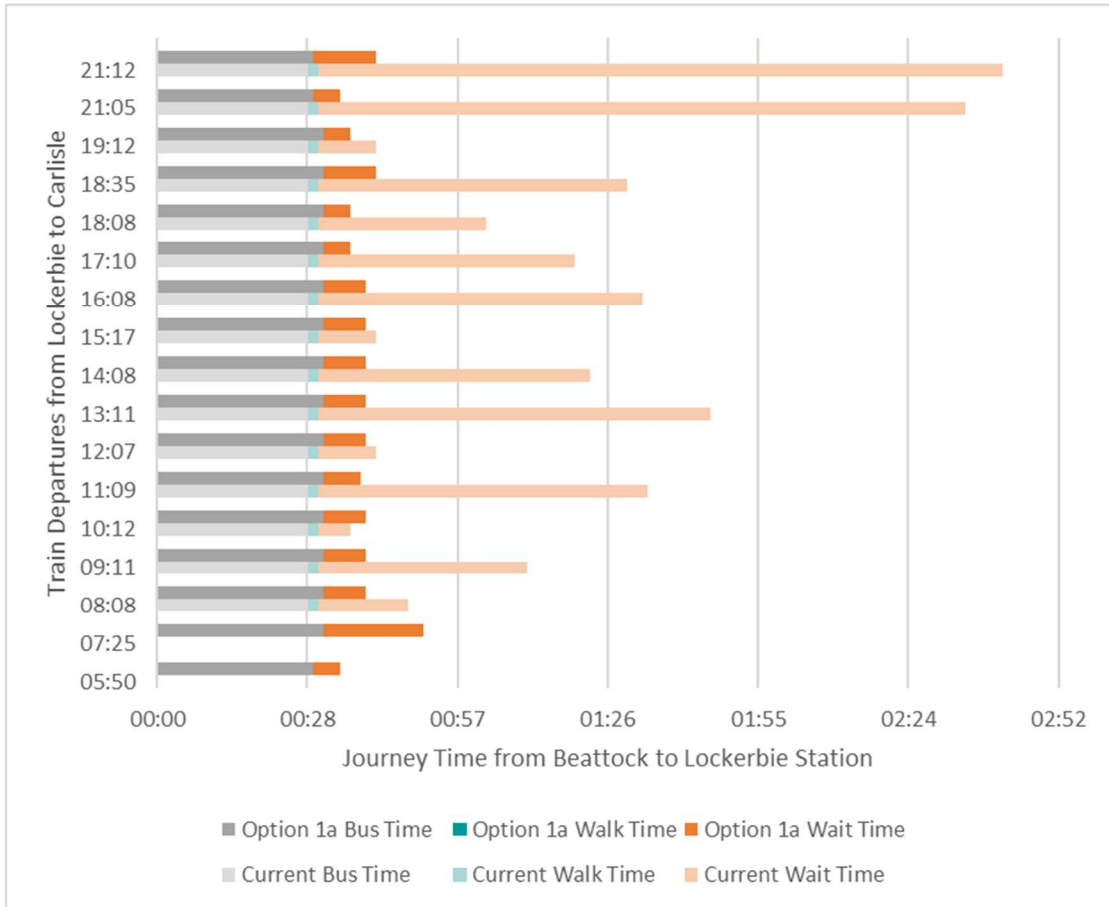


Figure J.7: Total Journey Time from Beattock to Lockerbie Railway Station (Carlisle Departures – Option 1a)

J.5.3 For outbound trips from Beattock to Edinburgh, Option 1a will:

- Reduce total journey times for all rail services;
- Generate greatest time savings for those accessing the 22:30 service – reduction of more than three hours, making this connection feasible.

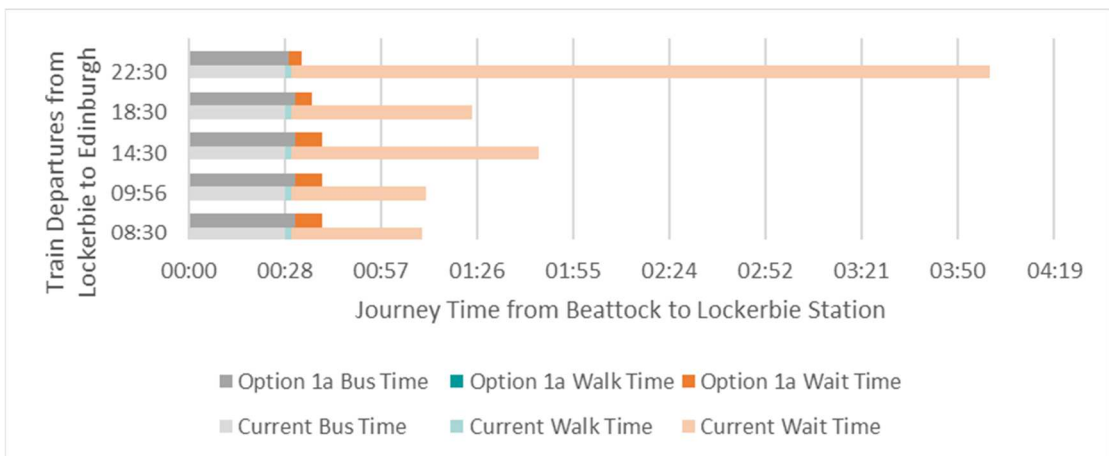


Figure J.8: Total Journey Time from Beattock to Lockerbie Railway Station (Edinburgh Departures – Option 1a)

J.5.4 For outbound trips from Beattock to Glasgow, Option 1a will:

- Provide access to one additional rail service at 07:11;
- Generate large reductions in journey times to evening rail services (post-5pm) but produce more mixed results during daytime hours – improvements to 2 services, negligible change (<5 minutes) in 2 services and deterioration in 2 services.
- Yield greatest time savings for the 22:09 rail service where waiting time is cut by circa 3 hours.

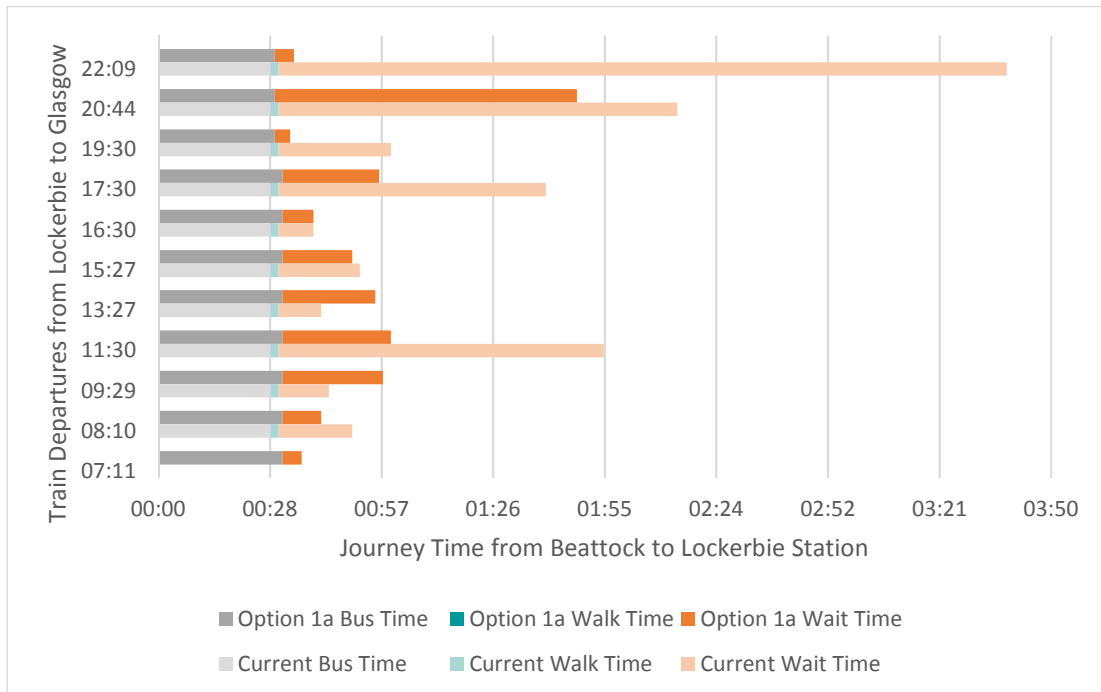


Figure J.9: Total Journey Time from Beattock to Lockerbie Railway Station (Glasgow Departures – Option 1a)

J.5.5 For inbound trips to Beattock from the south, Option 1a will:

- Provide onward travel from Lockerbie to Beattock from five additional rail services from the south;
- Reduce total journey times by an average of one third; however, journey time for those alighting from the 11:29 service will increase by 15 minutes also;
- Yield greatest time for afternoon services, specifically including the 14:29 and 16:30 services where waiting time is cut from circa one hour to five minutes.

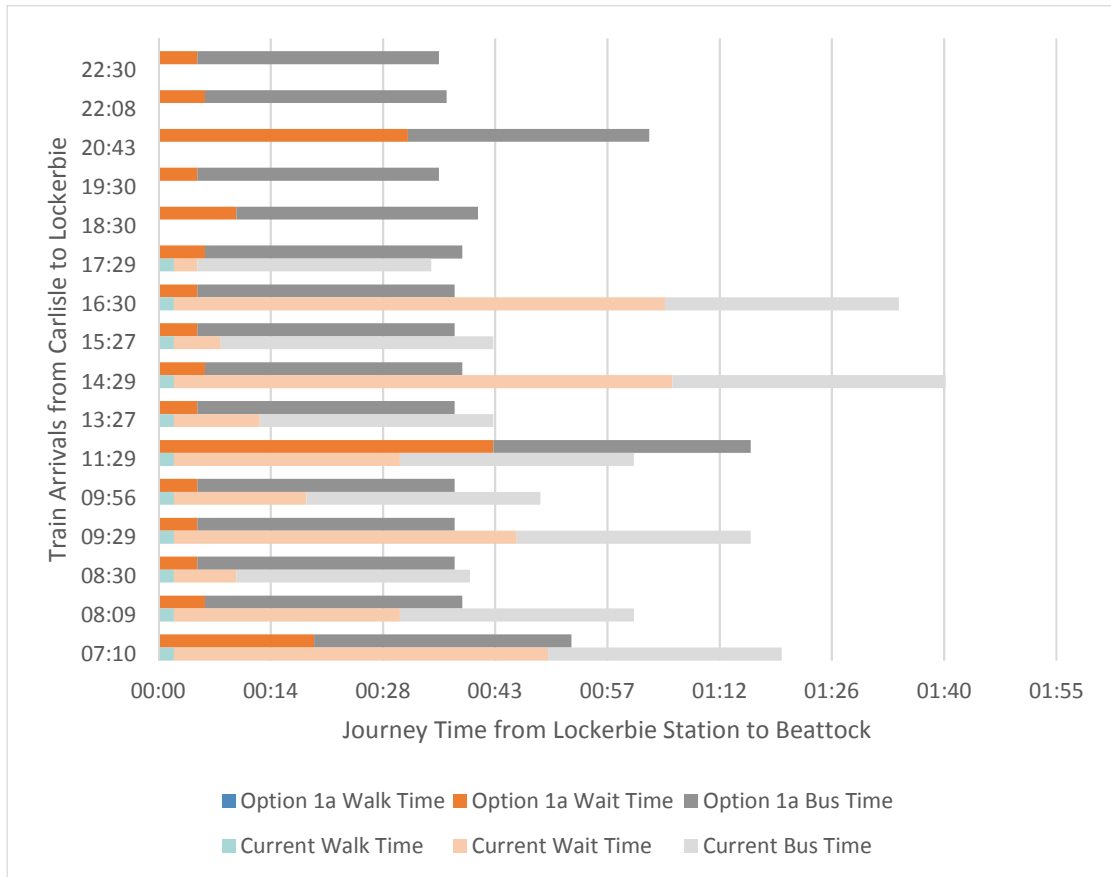


Figure J.10: Total Journey Time from Lockerbie Railway Station to Beattock (Carlisle Arrivals – Option 1a)

J.5.6 For inbound trips to Beattock from Edinburgh, Option 1a will:

- Provide access to two additional rail services;
- Reduce total journey times for all rail services except one (17:09), and the increase in journey time is negligible (3 minutes);
- Yield greatest time savings for morning services, specifically including the for the 9:11 and 11:08 services where waiting time is cut by 40-50 minutes.

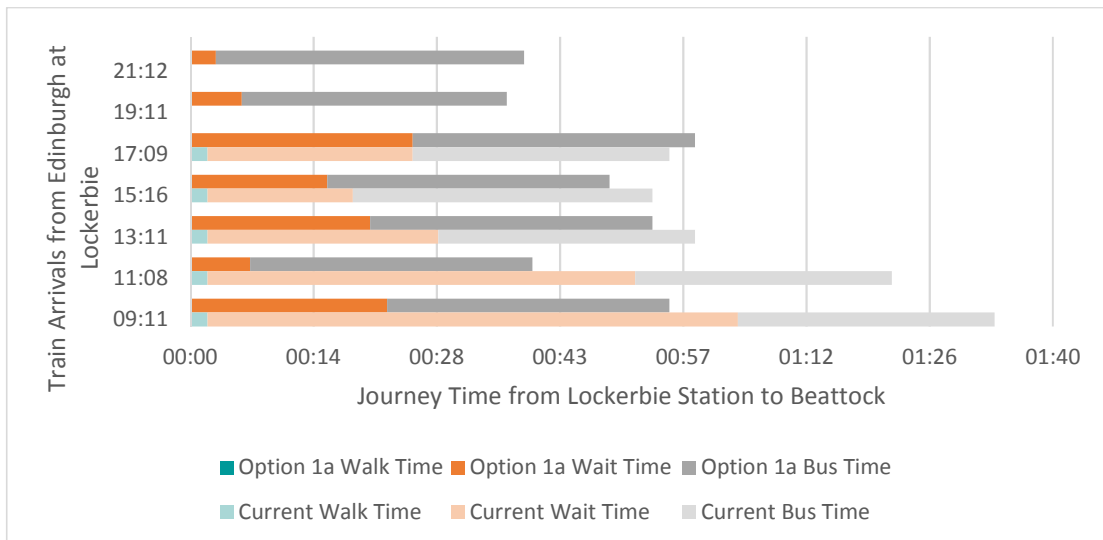


Figure J.11: Total Journey Time from Edinburgh Arrivals at Lockerbie to Beattock (Edinburgh Arrivals – Option 1a)

J.5.7 For inbound trips to Beattock from Glasgow, Option 1a will:

- Provide access to three additional rail services;
- Reduce average journey time by more than half, although time savings vary throughout the day from 20 minutes (08:08) to one hour 40 minutes (10:12);
- Yield greatest time savings for the 10:12 service where waiting time is cut by over 1.5 hours.

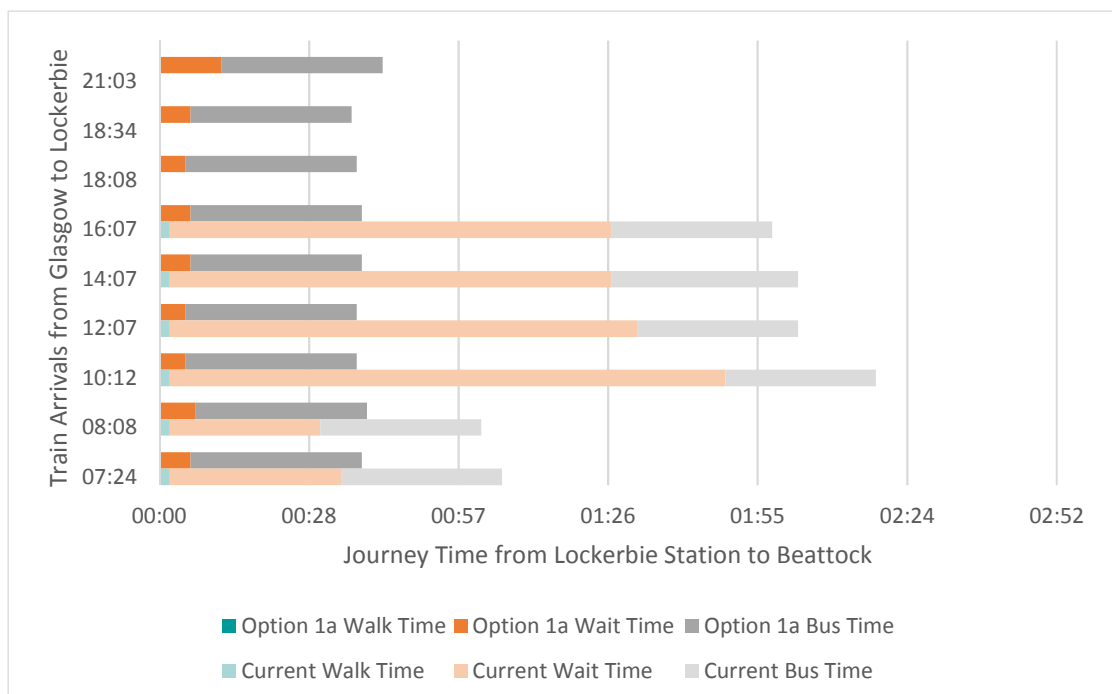


Figure J.12: Total Journey Time from Lockerbie Railway Station to Beattock (Glasgow Arrivals – Option 1a)

J.6 Impact of Option 1b

J.6.1 Option 1b involves the extension of the existing 246 bus service to Dumfries Railway Station, and the adjustment of service times to better integrate with train departures from Dumfries.

Option 1b also delivers notable integration improvements compared to the existing situation, although of a lesser magnitude than Option 1a.

J.6.2 For outbound trips from Beattock to the south, Option 1b will:

- Have varying impacts upon total journey times causing:
 - Journey time increases for four services;
 - No change in four services;
 - Journey time decreases in five services.

J.6.3 The greatest improvement is seen in the 21:12 service where journey time reduces by 75%, and the greatest detriment will be felt for those accessing the 16:08 departure where journey time will increase by over 150%.

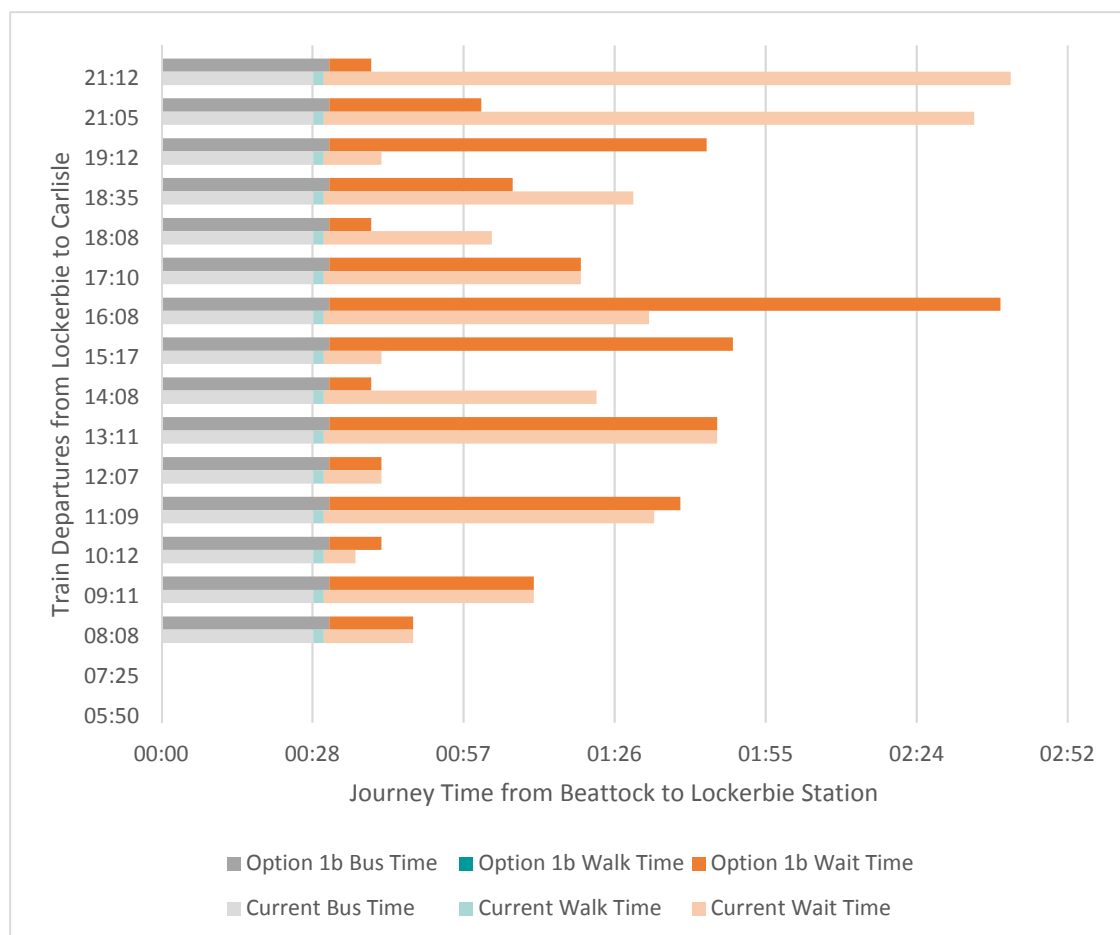


Figure J.13: Total Journey Times from Lockerbie Railway Station to Beattock (Carlisle Departures – Option 1b)

J.6.4 For outbound trips from Beattock to Edinburgh, Option 1b will again generate mixed results:

- No/negligible change in two services;
- Journey time decreases in three services.

J.6.5 The greatest improvement is seen in the 22:30 service where journey time reduces by more than three hours.

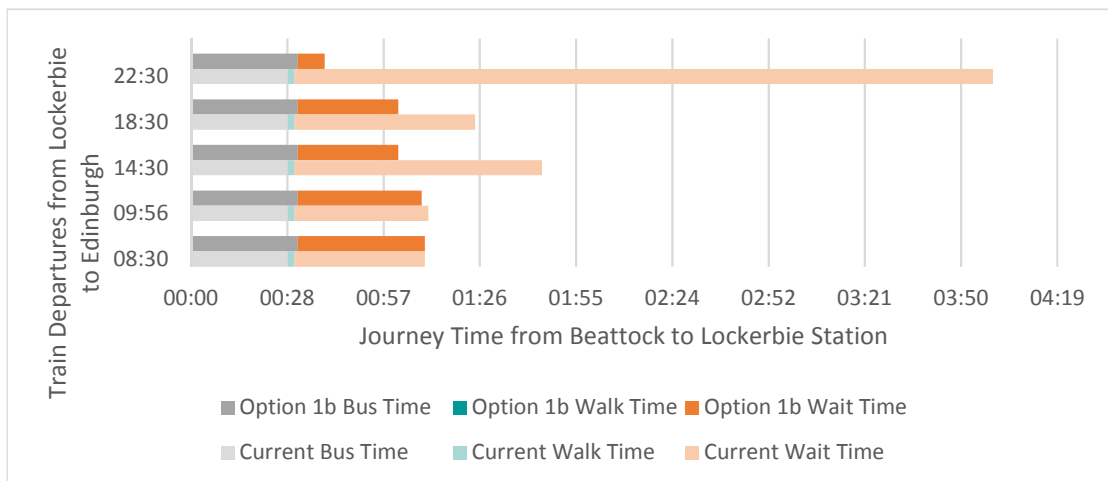


Figure J.14: Total Journey Times from Lockerbie Railway Station to Beattock (Edinburgh Departures – Option 1b)

J.6.6 For outbound trips from Beattock to Glasgow, Option 1b will:

- Reduce average journey time on the whole, but again yield a mixture of improvements and detrimental impacts.
- Greatest time savings will be achieved for those accessing late evening services – circa 2 hour saving for the 22:09 service.
- Cause certain journeys to become longer – notably the 13:27, 15:27 and 19:30 services, where waiting times increase by over an hour.

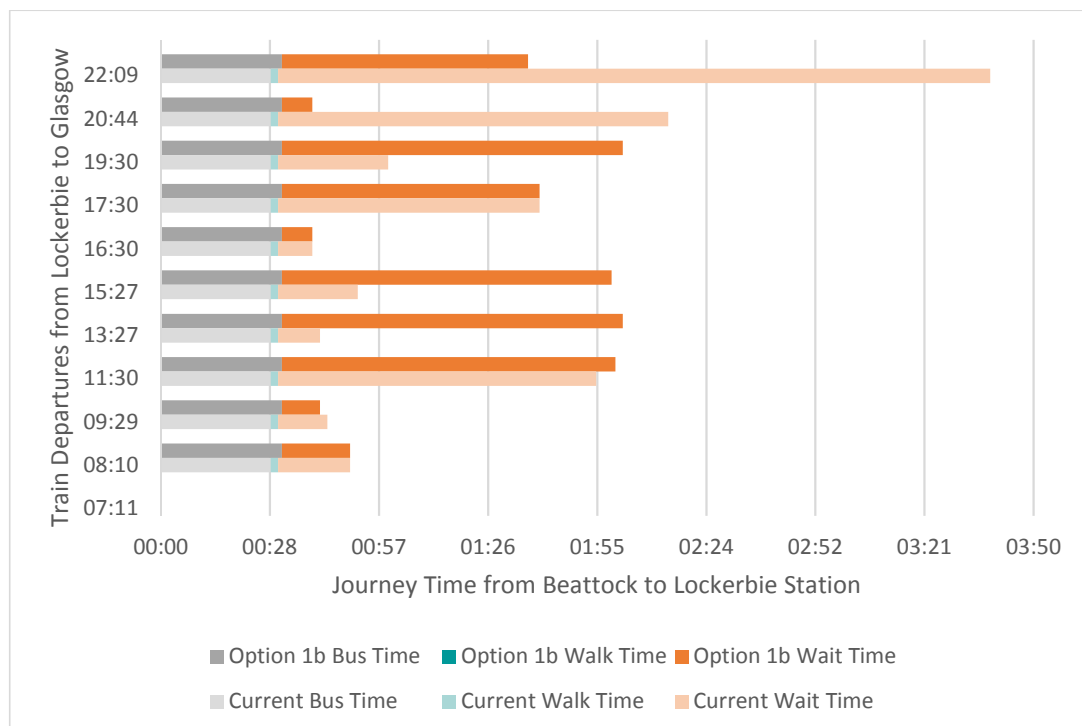


Figure J.15: Total Journey Times from Lockerbie Railway Station to Beattock (Glasgow Departures – Option 1b)

J.6.7 For inbound trips to Beattock from the south, Option 1b will:

- Permit return to Beattock by public transport for those alighting from the final five arrivals at Lockerbie from Carlisle. However, two of these trips involve a 2-3 hour wait in Lockerbie and so they are unlikely to be used in reality;
- Increase average journey times from Lockerbie Station, with mixed service-by-service results:
 - Slight journey time increases of 3 to 15 minutes during the morning, and larger increases associated with the 13:27 and 17:29 services of 36 minutes and 42 minutes respectively;
 - Journey time decreases for 14:29 (5 minutes), 15:27 (5 minutes) and 16:30 services (1 hour).

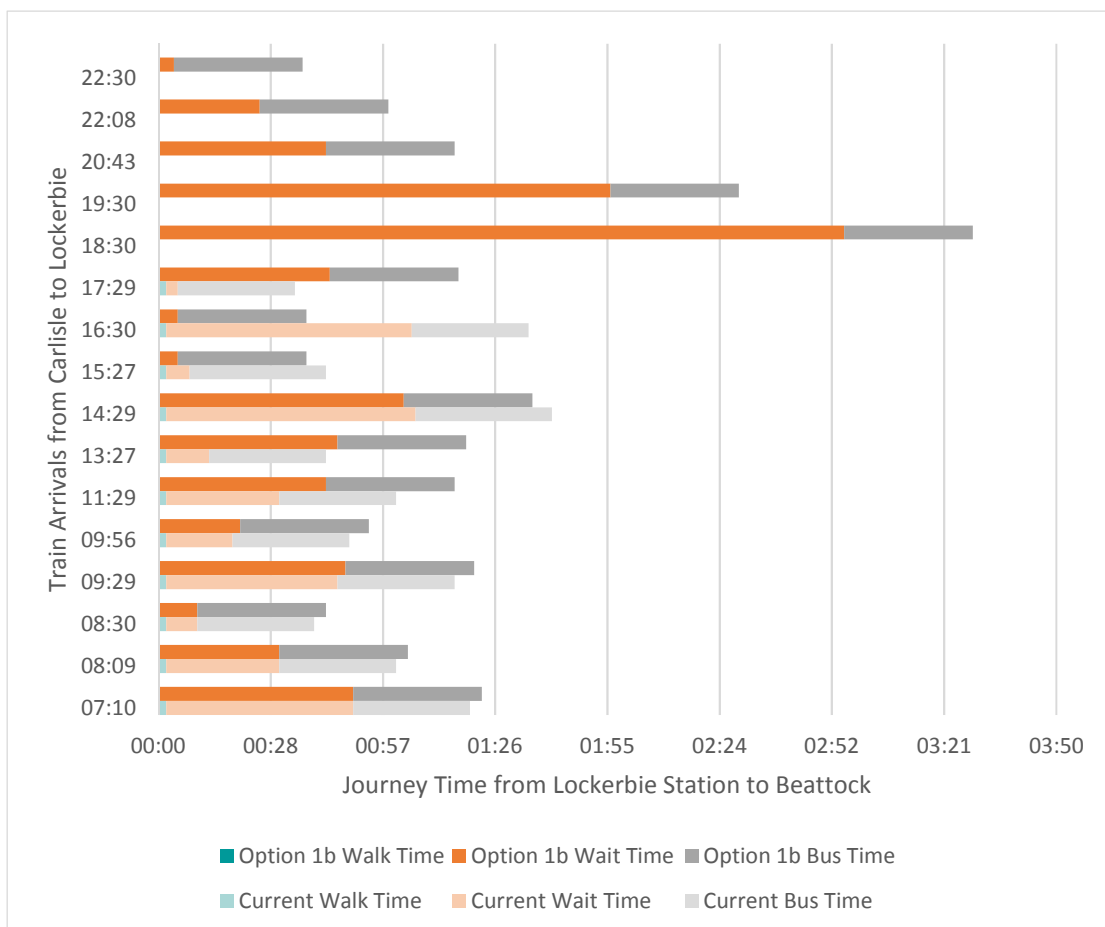


Figure J.16: Total Journey Times from Lockerbie Railway Station to Beattock (Carlisle Arrivals – Option 1b)

J.6.8 For inbound trips to Beattock from Edinburgh, Option 1b will:

- Permit return to Beattock by public transport for those alighting from the final two arrivals at Lockerbie from Edinburgh;
- Increase average journey times from Lockerbie Station by circa 20 minutes compared to existing, with journey time increases forecast for all services but one (15:16 where a five-minute time saving is made).

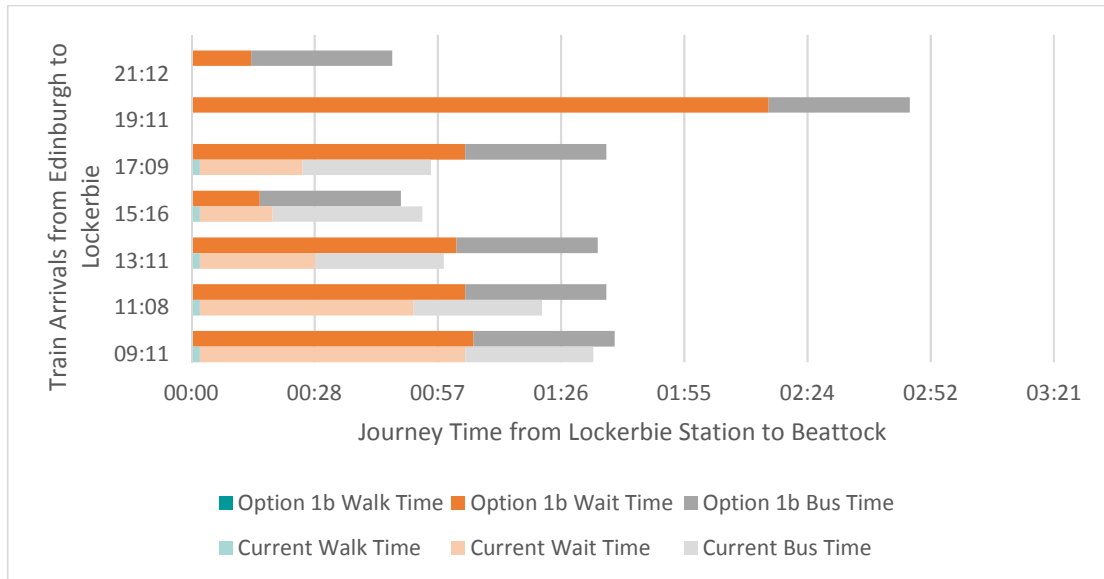


Figure J.17: Total Journey Times from Lockerbie Railway Station to Beattock (Edinburgh Arrivals – Option 1b)

J.6.9 For inbound trips to Beattock from Glasgow, Option 1b will:

- Permit return to Beattock by public transport for those alighting from the final three rail arrivals at Lockerbie from Glasgow. However, the onward bus connection from the 18:34 service is unlikely to be used given the almost 3 hour wait in Lockerbie;
- Decrease journey times on the whole, but produce mixed service-by-service results:
 - On two services there will be a negligible change of 5 minutes or less;
 - On four services journey times will decrease by 1-2 hours.

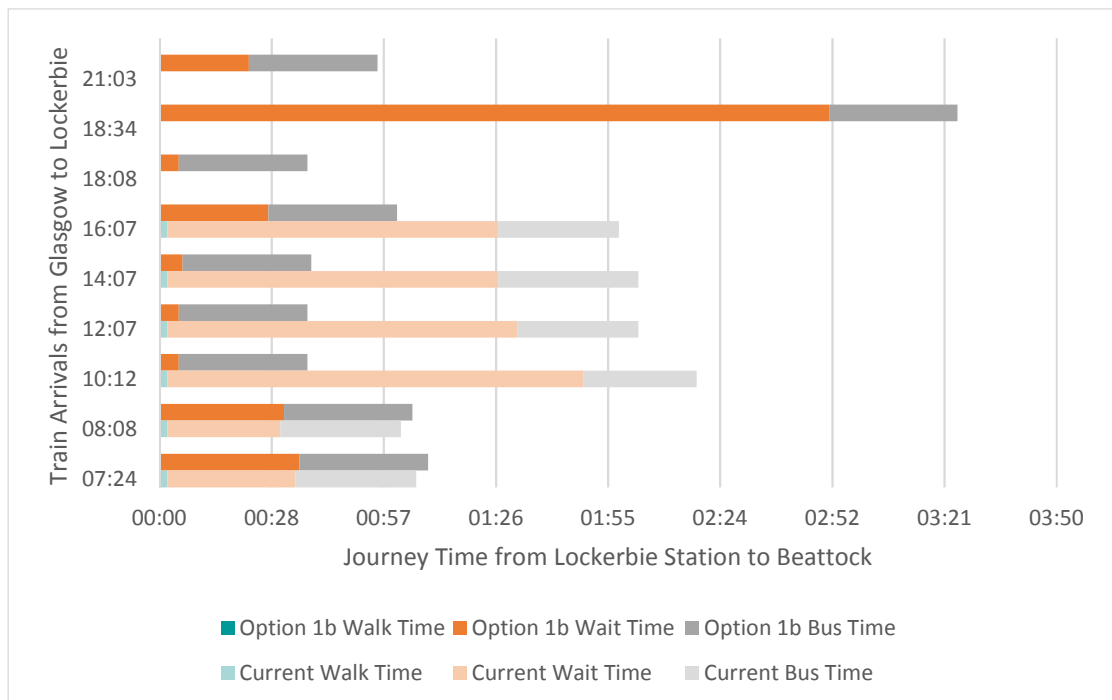


Figure J.18: Total Journey Times from Lockerbie Railway Station to Beattock (Glasgow Arrivals – Option 1b)

J.7 Summary

J.7.1 Table J.1 provides a summary of how each option performs against these metrics, considering average impacts across a weekday. This analysis assumes that people use the connecting bus services which minimises total journey time. As such, if an option results in a longer journey time to meet a specific train than at present, it is assumed that individuals would continue to use the existing service where possible (i.e. the option would have no impact).

Table J.1: Comparison of Option 1a and 1b against Existing Situation

Metric	Option	The south (via Carlisle)		Edinburgh		Glasgow	
		Outbound	Inbound	Outbound	Inbound	Outbound	Inbound
No. Additional Rail Services Accessible	1a	2	5	0	2	1	3
	1b	0	5	0	2	0	3
Average Change in Journey Time between Thornhill and Station	1a	-51%	-33%	-67%	-26%	-42%	-63%
	1b	-8%	7%	-47%	27%	0%	-51%
Average Change in Interchange Time	1a	-85%	-68%	-92%	-51%	-60%	-92%
	1b	-19%	6%	-66%	43%	-6%	-75%

J.7.2 **Option 1a** is a dedicated RailBus service designed to integrate with arrivals and departures at Lockerbie Railway Station, and as such, it is unsurprising the option performs better than Option 1b in terms of public transport integration. Option 1a permits access to 13 additional rail services per day, allowing to Beattock residents greater flexibility in the timing of their travel. Additionally, Option 1a will substantially reduce average journey times for inbound and outbound trips to all three destinations considered. Although in some cases journey times will increase, this relates to only circa 10% of services and this option is provided in addition to existing services so users can continue to use existing bus provision where this is the case (i.e. no detriment to the existing situation).

J.7.3 **Option 1b** involves the optimisation of the existing 380 commercial bus service to integrate with rail arrivals and departures at Lockerbie Railway Station. The new timetable was developed based prioritising access to Glasgow, followed by Carlisle and then Edinburgh, which is clear in the results. In terms of journey time impacts, Option 1b generates highly variable results, shortening some journeys while lengthening others. Approximately 40% of the trips considered would increase in length with Option 1b, with increases averaging circa 28 minutes. Option 1b facilitates access to 10 additional services per day, but these are inbound only and 3 of these new connections are likely to be little used as they involve a waiting time of circa 2 hours or more. It should be noted that alterations to the timetable of the existing service may not be possible for commercial reasons and the accessibility required to other destinations the bus serves.

Appendix K Part 1 Appraisal Summary Tables

Table K.1: Appraisal Summary Table – Option 1a – Transport Planning Objectives

Criteria	Score	Rationale
Transport Planning Objectives TPO1: Enable an effective day trip by public transport to key education, retail and social opportunities in Glasgow, Edinburgh and Carlisle	2	In the AM period the differential between car and public transport journey time to Carlisle is reduced by approximately 35 minutes (such that public transport travel time is only ten minutes longer than the equivalent trip by private car) and reduced by approximately 40 minutes to Edinburgh (such that public transport travel time is around only ten minutes longer than the equivalent trip by private car). In the PM period the differential between car and public transport journey time to Carlisle is reduced by approximately 35 minutes (such that public transport travel time is only six minutes longer than the equivalent trip by private car) and reduced by approximately 55 minutes to Edinburgh (such that public transport travel time around only ten minutes longer than the equivalent trip by private car). In the evening period the differential between car and public transport journey time to Carlisle is reduced by approximately 45 minutes (such that public transport travel time is only 13 minutes longer than the equivalent trip by private car) and reduced by approximately 2 hours 20 minutes to Edinburgh (such that public transport travel time is around ten minutes longer than the equivalent trip by private car). Additionally, the option will provide public transport access to an additional 3 outbound rail services and 10 inbound services, particularly those running early in the morning and late in the evening. The reduced journey time and increased accessibility to additional rail services is likely to enable more effective day trips to Edinburgh and Carlisle.
TPO2: Provide public transport connectivity which enables travel to and from the area across the day and across the week	2	The option would provide a service connecting from the study area to Lockerbie covering the rail operating day and enabling access to and from early morning and late evening services at Lockerbie, extending the hours in the day over which it is possible to make a trip.
TPO3: Increase the inbound public transport catchment to support local businesses through increased visitors to the area	2	The option is likely to provide an increase in the number of people able to access Beattock and Moffat from further afield. The option provides improved connectivity and reduced access time from the West Coast Main Line rail network for travel to / from further afield. The new service enables access to an additional 10 inbound services at Lockerbie Railway Station, meaning Beattock and Moffat are more easily accessible. This will provide much improved connectivity for tourists into the area, supporting local businesses and the overall economy of the area.

Table K.2: Appraisal Summary Table – Option 1a – STAG Criteria

Criteria		Score	Rationale
STAG Criteria	Environment	1	It was noted during the Pre-Appraisal stage of the study that private car ownership and use is high in the study area. The option is likely to encourage some minor modal shift from private car to bus and rail. As a result there will some minor benefit to the environment through a reduction in vehicle emissions and noise. The bus service will use the current road network and as such there will be little adverse impact on the environment.
	Safety	1	Any modal shift to sustainable transport that may be achieved would reduce private vehicles on the road network which has the potential to reduce traffic accidents, although the reduction is anticipated to be minor. The option would offer increased personal security through reduce the often long wait time at the station (for departures) or at the bus stop (for rail arrivals). This may be particularly beneficial to more vulnerable members of society such as the elderly, those less able and older unaccompanied children.
	Economy	2	The option may provide some minor benefit to the economy by improving the accessibility of employment and retail in Edinburgh and Carlisle as well as improving the accessibility of Beattock to tourists, which would benefit the local economy. However, increasing the accessibility of Edinburgh and Carlisle may have a negative impact on the local economy if people are more readily able to travel further afield to retail and social opportunities. While the overall travel time to Edinburgh is reduced, the improved connection to Lockerbie does not provide a travel time that could be considered suitable for commuting (around 1 hour 45 minutes) and as such the option is unlikely to offer any increase in the employment opportunities for those living in the study area. For travel to Carlisle however, the option provides a journey time of around an hour (down from around 90 minutes). This travel time could now be considered suitable for commuting and may open up new employment and educational opportunities in Carlisle.

Table K.3: Appraisal Summary Table – Option 1a – STAG Criteria

Criteria	Score	Rationale
Accessibility & Social Inclusion	2	<p>See TPOs which relate directly to accessibility.</p> <p>The option provides reductions in public transport travel time for trips between Beattock and Carlisle in the AM and PM periods (35 minutes), and evening period (45 minutes). In the AM period, the journey to Carlisle by public transport is just 10 minutes longer than the equivalent trip by private car, only 6 minutes longer in the PM period and 13 minutes longer in the evening period. For trips to Edinburgh, the option provides reductions in public transport travel time in the AM period (40 minutes) and the PM period (55 minutes), and evening period (2 hours 20). In the AM, PM and evening periods, the journey to Edinburgh by public transport is around just 10 minutes longer than the equivalent trip by private car.</p> <p>Public transport travel times to Glasgow are not improved in the AM or PM period due to the existing X74 bus service offering quicker journey times. A benefit is however seen in the evening period, where the option provides a reduction in public transport journey time of just under 2 hours. The Pre-Appraisal stage of the study identified the proportion of people aged 16-24 is lower in the study area than the local authority average, suggesting that there may be some out-migration from the area. It was also identified that there are limited direct public transport services to Edinburgh which limits the scope for commuting and travel for leisure, with very limited direct public transport services to Carlisle, limiting journeys to various parts of England, as well as the long bus travel times and poor integration between bus and rail times. The option would provide a moderate improvement in public transport access to employment and leisure and social opportunities in Carlisle throughout the day. This would be particularly beneficial to those without access to a car or for whom driving is not possible and the reduced journey times to Carlisle may widen the employment opportunities for those resident in the study area. This may reduce out-migration of the younger population and may also support the tourist industry in the area.</p> <p>A key benefit of improved accessibility to and from the study area will be in reducing the feelings of remoteness of the community and enabling local people to feel connected and part of a wider Scotland. This is especially important in terms of the long term sustainability of the community and the retention of younger people in the area.</p>
Integration	3	<p>The option involves the provision of a new dedicated Railbus service between Beattock and Lockerbie Railway Station, which will be supplementary to existing provision. The degree of integration of bus and rail connections is highly variable at present (e.g. on average it takes almost two hours to travel from Beattock by bus to board a train to Edinburgh but approximately 1 hour 10 mins to get back to Beattock having alighted from a train from Edinburgh). As such, proportional journey time savings are variable also. Nevertheless, averaging inbound and outbound trips, the option is expected to reduce the average public transport journey time between Beattock and Lockerbie arrivals/departures by 30 minutes for trains to/from Carlisle, and by circa 50 minutes for travel to/from Edinburgh and Glasgow trains. Additionally, the option will provide public transport access to an additional 3 outbound rail services and 10 inbound services. In addition, improving the public transport network and transport integration supports the aims of the National Transport Strategy, Swestrans Regional Transport Strategy, the Bus Action Plan and the Local Transport Strategy. The option is therefore aligned with the broader policy goals included within key national, regional and local policy documents.</p>

Table K.4: Appraisal Summary Table – Option 1a – Feasibility, Affordability and Public Acceptability

Criteria		Rationale
Other Criteria	Feasibility	<p>From an engineering perspective, the option does not require the build of any infrastructure or any land purchase and as such is unlikely to present any feasibility challenges.</p> <p>The introduction of the new service is likely to impact on the existing 380 service. The service routes from Moffat and Beattock through smaller communities (Wamphray, Johnstonebridge etc.) and a reduction in patronage may require additional funding to support the service, impacting on public funding and potentially leading to reductions in services elsewhere as a result. As intonated by bus stakeholders and SWestrans, the overall viability of services in the region is, in many cases, only achievable due to the resource intensive nature of overall bus operations. As such, the overall bus network and operation across the region is highly fragile and even minor changes to routes or services (or any new competition between services), which have the potential to tie up resources or affect patronage, can have major consequences. This is a very important factor when considering any changes to the network which may impact on existing services.</p>
	Affordability	<p>Analysis of the operating costs for the service indicates an annual operating cost of £345k, requiring approximately 160,000 passengers annually to break even. Consideration of Office of Rail and Road station usage estimates and consideration of National Rail Travel Survey data shows that the service is unlikely to generate sufficient demand to cover operating costs and as such is not considered to be commercially viable unless the service is subsidised. SWestrans budget for the operation of subsidised bus services has recently reduced. It is therefore unlikely that funding is available to operate the service.</p> <p>It should be noted that the bus schedule for the option, has been extended to extend the service over the full existing operating day. It may be possible to 'scale back' the number of connecting bus services to concentrate on peak time rail arrivals/departures only to minimise the cost of the service and hence make the service more commercially viable/require a lesser subsidy.</p> <p>The potential impact on the existing Service 380 requires consideration as patronage from this service is likely to be taken.</p>
	Public Acceptability	<p>Public transport integration was highlighted in the public consultation exercise undertaken during Pre-Appraisal. As the option offers direct connections between bus and rail with good integration of the bus and rail timetables, it is likely to carry a low public acceptability risk. Furthermore, the public consultation highlighted sentiment that the biggest transport problem faced by respondents was limited travel mode choice. Improving access to the rail network is likely to therefore be publicly acceptable, although there may be disappointment that a railway station in Beattock itself is not provided.</p>

Table K.5: Appraisal Summary Table – Option 1b – Transport Planning Objectives

Criteria	Score	Rationale
Transport Planning Objectives TPO1: Enable an effective day trip by public transport to key education, retail and social opportunities in Glasgow, Edinburgh and Carlisle	1	Overall the option has benefit to trips to Edinburgh and Carlisle with a reduced overall travel time by public transport in the afternoon and evening period (although the improvements are less than Option 1a). In the PM period the differential between car and public transport journey times to Carlisle and Edinburgh are both reduced by approximately 30 minutes such that public transport travel time is approximately only 10 minutes longer (to Carlisle) and 35 minutes longer (to Edinburgh) than the equivalent trip by private car). In the evening period the differential between car and public transport journey time to Carlisle is reduced by approximately 45 minutes (such that public transport travel time is only around 10 minutes longer than the equivalent trip by private car) and reduced by approximately 2 hours 10 minutes to Edinburgh (such that public transport travel time is around 20 minutes longer than the equivalent trip by private car) Public transport travel times to Glasgow are not improved in the AM or PM period due to the existing X74 bus service offering quicker journey times. A benefit is however seen in the evening period, where the option provides a reduction in public transport journey time of just under 2 hours. Overall the option is therefore likely to enable a more effective day trip to Edinburgh and Carlisle.
TPO2: Provide public transport connectivity which enables travel to and from the area across the day and across the week	1	This option involves extension of the operating hours of the existing 380 bus service and optimisation of the timetable to align with rail arrivals and departures at Lockerbie Railway Station. The option permits return to Beattock from a further 10 rail services (i.e. those after 18:00), which are currently unusable without private transport.
TPO3: Increase the inbound public transport catchment to support local businesses through increased visitors to the area	1	The option is likely to provide a small increase in the number of people able to access Beattock and Moffat from Edinburgh with the option enabling access to an additional 10 inbound services at Lockerbie Railway Station. This will provide an element of improved connectivity for tourists into the area, supporting local businesses and the overall economy of the area.

Table K.6: Appraisal Summary Table – Option 1b - STAG Criteria

Criteria	Score	Rationale
STAG Criteria	Environment	1 It was noted during the Pre-Appraisal stage of the study that private car ownership and use is high in the study area. The option is likely to encourage some minor modal shift from private car to bus and rail. As a result there will be some minor benefit to the environment through a reduction in vehicle emissions. The bus services use the current road network and as such there will be little adverse impact on the environment.
	Safety	0 Any modal shift to sustainable transport that may be achieved would reduce private vehicles on the road network which has the potential to reduce traffic accidents, although the reduction is anticipated to be minor. Reduced wait time at the station may be particularly beneficial to more vulnerable members of society such as the elderly, those less able and older unaccompanied children.
	Economy	1 The option may provide some minor benefit to the economy by improving the accessibility of employment and retail in Carlisle and Edinburgh but with the increased accessibility less than that offered by Option 1a.
	Accessibility & Social Inclusion	1 The Pre-Appraisal stage of the study identified the proportion of people aged 16-24 is lower in the study area than the local authority average, suggesting that there may be some out-migration from the area. It was also identified that there are limited direct public transport services to Edinburgh which limits the scope for commuting and travel for leisure, with very limited direct public transport services to Carlisle, limiting journeys to various parts of England, as well as the long bus travel times and poor integration between bus and rail times. The option would provide a moderate improvement in public transport access to employment and leisure and social opportunities in Carlisle throughout the day and in Edinburgh and Glasgow dependant on time of day. This would be particularly beneficial to those without access to a car or for whom driving is not possible. In addition, the reduced journey times to Carlisle may widen the employment opportunities for those resident in the study area. This may reduce out-migration of the younger population and may also support the tourist industry in the area.
	Integration	2 This option involves extension of the operating hours of the existing 380 bus service and optimisation of the timetable to align with rail arrivals and departures at Lockerbie Railway Station. Overall, this option has negligible impact upon connections between Beattock and rail services to Carlisle / The South, compared with existing trips - with a slight decrease in length of average outbound trip and slight increase in inbound trips to connecting trains at Lockerbie. Notable improvements in outbound trips to Edinburgh bound trains are anticipated, with average connecting journey times reducing from almost two hours to one hour; however conversely, average inbound trips from train arrivals back to Beattock / Moffat are expected to increase in length (22 minutes). Similarly, integration improvements are highly mixed for connections with Glasgow rail services - with negligible impact on outbound services but circa a 45 minute improvement for inbound services. Additionally, this option permits return to Beattock from a further 10 rail services (i.e. those after 18:00), which are currently unusable without private transport. In addition, improving the public transport network and transport integration supports the aims of the National Transport Strategy, SWestrans Regional Transport Strategy, the Bus Action Plan and the Local Transport Strategy. The option is therefore aligned with the broader policy goals included within key national, regional and local policy documents.

Table K.7: Appraisal Summary Table – Option 1b - Feasibility, Affordability and Public Acceptability

Criteria		Rationale
Other Criteria	Feasibility	From an engineering perspective, the option does not require the build of any infrastructure or any land purchase and as such is unlikely to present any feasibility challenges.
	Affordability	The amendment of Service 380 to provide better rail connections requires an additional bus resource, and additional operating hours of approximately 5,500 hours. The total annual cost of service provision would be £50k. This would require approximately 23,500 additionally passenger trips annually to break even (an additional 65 passenger trips a day). As there are 21 bus services operating each weekday (departures and arrivals), this equates to an additional 3 passengers per service. It is anticipated that this would be achievable if rail and bus times were better integrated.
	Public Acceptability	Public transport integration was highlighted in the public consultation exercise undertaken during Pre-Appraisal. As the option offers direct connections between bus and rail with good integration of the bus and rail timetables, it is likely to carry a low public acceptability risk. Furthermore, the public consultation highlighted sentiment that the biggest transport problem faced by respondents was limited travel mode choice. Improving access to the rail network is likely to therefore be publicly acceptable, although there may be disappointment that a railway station in Beattock itself is not provided and the improvements may seem very minor and not be seen to offer any significant benefits. Existing service users who are affected by timetable adjustments may also not welcome any change to the service if it negatively impacts upon their journeys.

Table K.8: Appraisal Summary Table – Option 3 - Transport Planning Objectives

Criteria		Score	Rationale
Transport Planning Objectives	TPO1: Enable an effective day trip by public transport to key education, retail and social opportunities in Glasgow, Edinburgh and Carlisle	2	The option will provide much improved flexibility in time of travel both to and from Edinburgh, therefore enabling more effective day trips to and from the capital. The option does not provide any improved access to either Carlisle or Glasgow.
	TPO2: Provide public transport connectivity which enables travel to and from the area across the day and across the week	2	The additional instances of the service on weekdays as well as on Saturdays and Sundays enables travel to and from the area to Edinburgh across the day and across the week. The option does not provide any improved connectivity to either Carlisle or Glasgow.
	TPO3: Increase the inbound public transport catchment to support local businesses through increased visitors to the area	1	The option is likely to provide a small increase in the number of people able to access Beattock and Moffat from Edinburgh given the increased connectivity. This will provide an element of improved connectivity for tourists into the area, supporting local businesses and the overall economy of the area. However, the journey time from Edinburgh by bus to the area is still long (2 and 1/2 hours) and may not encourage additional visitors.

Table K.9: Appraisal Summary Table – Option 3 - STAG Criteria

Criteria		Score	Rationale
STAG Criteria	Environment	0	The option is unlikely to encourage modal shift from private car to bus as the journey time to Edinburgh will still be substantially longer than that by car. The bus service will use the current road network and as such there will be little adverse impact on the environment.
	Safety	0	There is unlikely to be any modal shift to sustainable transport as travel by private car will still be quicker. As such, it is unlikely that there would be any reduction in private vehicles on the road network with therefore limited impact on traffic accident rates.
	Economy	1	The option may provide some benefit to the economy by improving the accessibility of social and retail facilities in Edinburgh, while also increasing the accessibility of Beattock to tourists. Later operating hours for bus services would also enable visitors to the town to stay for a longer time period, thus additionally boosting the local economy.
	Accessibility & Social Inclusion	2	See TPOs which relate directly to accessibility. The option is particularly beneficially to those without a private car or unable to drive. This includes: <ul style="list-style-type: none"> • Those on lower incomes for whom owning a car is not possible due to the costs involved; • Those less-abled for whom driving is not an option; • Children under the age of 17. The Pre-Appraisal stage of the study identified the proportion of people aged 16-24 is lower in the study area than the local authority average, suggesting that there may be some out-migration from the area. It was also identified that there are limited direct public transport services to Edinburgh which limits the scope for commuting and travel for leisure. The option would provide improvement in public transport access to leisure and social opportunities in Edinburgh given the increased opportunities to travel and therefore travel time flexibility. This would be particularly beneficial to those without access to a car or for whom driving is not possible. The improved access may help may reduce out-migration of the younger population. However, those without access to a car or unable to drive are still highly disadvantaged as the long travel time to Edinburgh by bus is unchanged. Given the unchanged long journey time (around 2 & ¼ hours), the option is unlikely to increase the accessibility of employment opportunities.
	Integration	1	This option does not generate any specific transport integration benefits but improving the public transport network supports the aims of the National Transport Strategy, SWestrans Regional Transport Strategy, the Bus Action Plan and the Local Transport Strategy. The option is therefore aligned with the broader policy goals included within key national, regional and local policy documents.

Table K.10: Appraisal Summary Table – Option 3 - Feasibility, Affordability and Public Acceptability

Criteria		Rationale
Other Criteria	Feasibility	From an engineering perspective, the option does not require the build of any infrastructure or any land purchase and as such is unlikely to present any physical feasibility challenges.
	Affordability	<p>Analysis of the operating costs for the service indicates an annual operating cost for the additional service operation of £261k and an estimated existing service operations of £225k. Annual patronage for the services is 198,123, taken from Council records.</p> <p>Applying an elasticity factor of +0.4, to account for changes in the level of service provision, gives 22,500 additional passengers.</p> <p>The net cost of the service is known to be £391k (from Council records), with an estimated gross cost of £795k. Estimated revenue is therefore £404k. Dividing this figure by current annual patronage gives an average fare of £2.04 equating to an annual revenue from the service enhancements of £46k. An annual costs of £225k and total revenue of £46k, means the option would incur annual losses of £179k and would not be viable.</p> <p>SWestrans budget for the operation of subsidised bus services has recently reduced. It is therefore unlikely that subsidy funding is available to operate the improved service.</p>
	Public Acceptability	The public survey undertaken during Pre-Appraisal highlighted service frequency as one of the most significant problems faced when travelling by bus. Improved access to major cities was noted as an opportunity to increase the accessibility of education and job opportunities. The option is therefore likely to be accepted by the public.

Table K.11: Appraisal Summary Table – Option 6 - Transport Planning Objectives

Criteria	Score	Rationale
Transport Planning Objectives TPO1: Enable an effective day trip by public transport to key education, retail and social opportunities in Glasgow, Edinburgh and Carlisle	3	The option provides large reductions in public transport travel time when a rail connection is possible. For travel to Glasgow the option offers a rail service at around 07:30 from Beattock which arrives into Glasgow around 08:20. In the return direction, the option offers a return trip just before 7pm. This makes for an effective day in Glasgow with just 1 hour 40 of travel time in total. While the X74 bus service offers connectivity at present, the total travel time for a return journey to Glasgow would be over 3 hours, meaning a much earlier start and later finish to enable the same amount of time in the city. For travel to Edinburgh, the service would offer connectivity to access Edinburgh for around 08:30. A return trip would be possible just after 6pm, making for an effective day in Edinburgh with just 1 hour 45 of travel time in total. The current 101 bus service offers access to Edinburgh at present, but the total travel time for a return journey to is around 5 hours, and the lack of services means users are consigned to departing on the very early 0600 bus and returning on the 1720 from Edinburgh (not arriving back to Beattock until 1945). No direct access is at present available to Carlisle and the journey time by public transport is around 1 & 1/4 to 2 hours depending on time of travel equating to potentially 4 hours of travel time for a return trip. With the option in place, Carlisle can be reached in less than 40 minutes and by 0830 in the morning, with the last return trip at around 2215 back to Beattock, making for a very effective day in Carlisle with just 1 hour 20 of travel time.
TPO2: Provide public transport connectivity which enables travel to and from the area across the day and across the week	2	The option provides an additional connections to Glasgow, Edinburgh and Lockerbie on a weekday / Saturday (note that the Sunday timetable was not developed for the appraisal). The option extends the operating day for connecting with Lockerbie, with coverage providing connectivity much later into the evening. Note that this also provides the same access back from Carlisle as all Lockerbie rail services also stop at Carlisle. While the option does not extend the hours over which it is possible to access Glasgow (given the existing X74), the rail service, the start time of the journeys to Glasgow could be much later given the much reduced journey time.
TPO3: Increase the inbound public transport catchment to support local businesses through increased visitors to the area	3	The option is highly likely to provide a significant increase in the number of people able to access Beattock and Moffat from further afield. The option provides much reduced journey times from Edinburgh, Glasgow and Carlisle to the area opening up the opportunity for day trips to the area. This is likely to encourage tourists into the area, supporting local businesses and the overall economy of the area.

Table K.12: Appraisal Summary Table – Option 6 - STAG Criteria – Environment, Safety and Economy

Criteria		Score	Rationale
STAG Criteria	Environment	-1	<p>The option would involve the construction of the railway station at Beattock. This may have adverse effects on the environment during construction and there may also be long-term noise impacts in the area close to the station due to train deceleration and acceleration. The option does not involve the running of additional trains (just an additional stop for existing trains) and therefore there will be little adverse impact on the environment in terms of emissions. It was noted during the Pre-Appraisal stage of the study that private car ownership and use is high in the study area. Any modal shift to rail that could be achieved would reduce car use and associated noise and emissions.</p> <p>If people currently drop family / friends at Lockerbie station this requires a 50km round trip. Each journey transferred to Beattock station, if it opened, would save both 100km of car travel (drop off and pick up return trips) and the associated driver time. In addition, for those currently driving to Lockerbie station and leaving their car, transfer to Beattock station would free up parking spaces at Lockerbie, as well as reducing car miles by around 50km (for the outward and return trip to the station).</p>
	Safety	1	Any modal shift to rail that may be achieved would reduce private vehicles on the road network which has the potential to reduce traffic accidents, although the reduction is anticipated to be minor.
	Economy	3	The option has the potential to provide major benefit to the economy by improving the accessibility of employment and retail in Carlisle, Edinburgh and Glasgow. Journey times to these cities are significantly reduced and rail times would allow for very effective commuting. However, increasing the accessibility of locations further afield may have a negative impact on the local economy if people are more readily able to more easily travel further to retail opportunities. The increased accessibility is likely to encourage increased tourist numbers to the study area through enabling day trips to the area from the Central Belt and from the south, providing benefit to the local tourist economy.

Table K.13: Appraisal Summary Table – Option 6 - STAG Criteria – Accessibility and Integration

Criteria	Score	Rationale
Accessibility & Social Inclusion	3	<p>See TPOs which relates directly to accessibility.</p> <p>The option is particularly beneficially to those without a private car or unable to drive. This includes:</p> <ul style="list-style-type: none"> • Those on lower incomes for whom owning a car is not possible due to the costs involved; • Those less-abled for whom driving is not an option; • Children under the age of 17. <p>Much reduced travel time to Glasgow, Edinburgh and Carlisle would offer particular benefits:</p> <ul style="list-style-type: none"> • Increased access by public transport to job opportunities in Carlisle, Edinburgh and Glasgow, now all within what is likely to be considered a suitable commuting distance; • For the elderly who have stopped driving for whom the improved access may enable improved accessibility to the major hospitals in Edinburgh and Glasgow; • Those seeking Higher Education opportunities; • Children under the age of 17 through providing an increased ability to travel independently, providing access to a greater range of extra-curriculum and social activities in which to participate in Glasgow, Edinburgh and Carlisle; • Supporting the tourist industry in the local area. The existence of a rail station does tend to place a location 'on the map' and may be significant in attracting a greater number of tourists to the area. <p>It should be noted that the station is located 4.5km from the more major community in Moffat, which presents an accessibility issue for those less able and the elderly.</p> <p>The existence of a rail station does tend to place a location 'on the map' and may be significant in attracting a greater number of tourists to the area.</p> <p>In addition to the comments for the TPOs it is important to note that a key benefit of improved accessibility to and from the study area will be in reducing the feelings of remoteness of the community and enabling local people to feel connected and part of a wider Scotland. This is especially important in terms of the long term sustainability of the community and the retention of younger people in the area. The option provides better equality of access to all enabling fair access to the wider opportunities.</p>
Integration	2	<p>Provision of the rail station itself does not offer any direct mode integration benefits. However, the development of a station with suitable facilities for cycle parking, and with safe and secure walking access routes has the potential to integrate rail and active travel modes. It is also assumed that a shuttle bus and existing buses would serve the station and offer bus to rail integration benefits. This will be particularly important for Beattock Railway Station given the wide rural area it may serve i.e. it will be the closest railway station for those in Moffat, for whom a walk to the railway station will not be possible by foot and in many instances by bike (for those a further distance from the station), given the distance.</p> <p>In addition, improving the public transport network and transport integration supports the aims of the National Transport Strategy, SWestrans Regional Transport Strategy, the Bus Action Plan and the Local Transport Strategy. The option is therefore aligned with the broader policy goals included within key national, regional and local policy documents.</p>

Table K.14: Appraisal Summary Table – Option 6 – Feasibility

Criteria		Rationale
Other Criteria	Feasibility	<p>There are many changes likely to take place on the WCML during the gestation period of a potential new rail station at Beattock and trying to identify specific paths for new train services, or the impact of additional calls in existing services, is unlikely to inform future options. At the strategic level, addition of calls at a re-opened Beattock Railway Station by TransPennine trains could, if planned now, be done with the minimum impact on the timetable structure, although it would potentially impact adversely on journey times effecting the ability of rail to compete with the air travel market. While it would be possible to call at Beattock Railway Station instead of another smaller station, either Lockerbie or a smaller Cumbrian station, there would be a loss of service/revenue elsewhere which may be bigger than the benefits arising at Beattock. In summary, it is therefore unlikely that long distance trains could form the base load train service if Beattock Railway Station were to re-open.</p> <p>In the long term however, there is an opportunity to further explore the potential for a new station at Beattock through consideration of the Scotland Route Study defined Stirling – Carlisle via Coatbridge 'Opportunity to Travel', with a new train service to serve Lockerbie and Motherwell, which could also call at a very limited number of stations (existing or new) between Motherwell and Carlisle. The service will not require any additional infrastructure for it to operate. The major risk to delivery will be capacity on the WCML, however, because the service would avoid the very congested areas around Haymarket/Waverley and Glasgow Central it would be slightly easier to plan than additional services to Edinburgh and Glasgow. Considering existing train running times, there are potentially considerable journey time savings to be had from a new direct train service and as the area to be served is right between (so furthest from) the two main Scottish airports it provides an opportunity to compete for long distance travel along this corridor.</p>

Table K.15: Appraisal Summary Table – Option 6 - Affordability and Public Acceptability

Criteria	Rationale
Affordability	<p>It should be noted that :</p> <ul style="list-style-type: none"> • It is not clear exactly where the station would be located, including whether it is on the fast tracks or the loop lines; • There is likely to be a need to modify the overhead line equipment (OLE) to meet the specific standards that now apply at stations. The particular issues are wire heights through stations which have recently been revised and can result in the need for the contact wires to be much higher than hitherto has been the case. With the complexity of the track layout in the Beattock area, the raising of wire heights is likely to impact on a wider area than just around the station site and be disruptive and expensive; • The land value will be relatively low, but not negligible as there is industrial use close to the potential station area; • The public road is not far away but will require upgrades and new access; and • The platforms will likely need to be longer than have been provided at most new stations. <p>The option requires the build of the railway station requiring two platforms whose length will likely need to be longer than has been provided at most new stations; a Cross-track, DDA compliant footbridge; and passenger facilities (including waiting shelters, Customer Information System (CIS), Public Address (PA) & CCTV systems with one ticket machine).</p> <p>Taking into account the need to make an allowance for OLE alterations suggests a cost in the £14m - £15m range to include an allowance for significant OLE alterations that applies to new stations. As the data used to estimate this range is mostly outturn data, it is not considered that any additional Optimism Bias is required.</p> <p>While no analysis of potential revenue generation has been made, a very high level estimate of potential patronage has been made and shows:</p> <ul style="list-style-type: none"> • A potential Beattock Railway Station catchment population of 7,800 (with no limit on drive time to the station); • A potential Beattock Railway Station catchment population of approximately 5,900 (if a 30-minute drive time 'cap' to the station is assumed);
Public Acceptability	<p>The option is likely to be widely accepted by the local public given the survey responses during the public engagement which showed the strong sentiment for this option. The Beattock Railway Station Action Group is operational in the area working for the reinstatement of the railway station, further highlighting the public desire to see the station re-opened.</p> <p>However, in the medium term, if the station were to be re-opened with the timetable as suggested there would be a loss of service frequency and connectivity at Lockerbie station which is unlikely to be favoured by those using the station.</p> <p>The reinstatement of the station is likely to impact on existing bus services between Moffat / Beattock and Lockerbie, Glasgow and Edinburgh. If these services were reduced as a result, users of the services who do not have ease of access to the rail network would see their services reduce, reducing their overall accessibility. This is unlikely to be accepted.</p>

Appendix L Part 2: Further Engagement

L.1 Engagement Overview

L.1.1 During the later stages of the study, further consultation was undertaken, including:

- Public Event in Beattock with an associated online survey;
- Beattock Station Action Group
- Visit Moffat;
- Moffat Academy;
- SWestrans and Dumfries and Galloway Council Officers: face-to-face meeting;
- Stagecoach West Scotland: face-to-face meeting;
- Houstons Coaches: face-to-face meeting;
- Network Rail: email correspondence;
- ScotRail: email correspondence;
- Virgin Trains: email correspondence;
- TransPennine Express: email correspondence; and
- South Lanarkshire Council.

L.2 Public Event

- L.2.1 A Public Event was held on 24th January 2019 in Moffat from 16:00 – 20:00 at Moffat Town Hall. The purpose of the event was to present information about the study, covering all stages of the study including the problems identified, the options generated and the option appraisal process and key appraisal findings. The events were publicised via social media by the Council and also communicated to local people through Beattock Station Action Group.
- L.2.2 A feedback form was available for completion at the event asking participants about the severity of the problems identified, the impacts of the problems on them and their community, and their thoughts on the options and how they would benefit them. Pre-paid envelopes were also made available if people wished to complete the feedback form at home and post back. Furthermore, the feedback survey (identical to that handed out at the event) was made available online for completion.
- L.2.3 The Public Event material was also made available online after the event, with the link to the online version of the feedback survey alongside it. The Council further publicised that the material was available.
- L.2.4 In total 380 people attended the event on the night, with a total of 528 feedback surveys completed (combined paper, posted and online surveys completed).
- L.2.5 A summary of the feedback provided is presented here.
- L.2.6 Figure L.1 maps the postcodes that respondents gave indicating where they live. As shown, the majority of respondents were from Moffat and Beattock. There were respondents scattered

down the A74(M) to Lockerbie and A701 to Dumfries. Some of the respondents were from areas not shown on the map below. There were respondents from Annan, Carlisle, Glasgow, Edinburgh, Manchester and London.

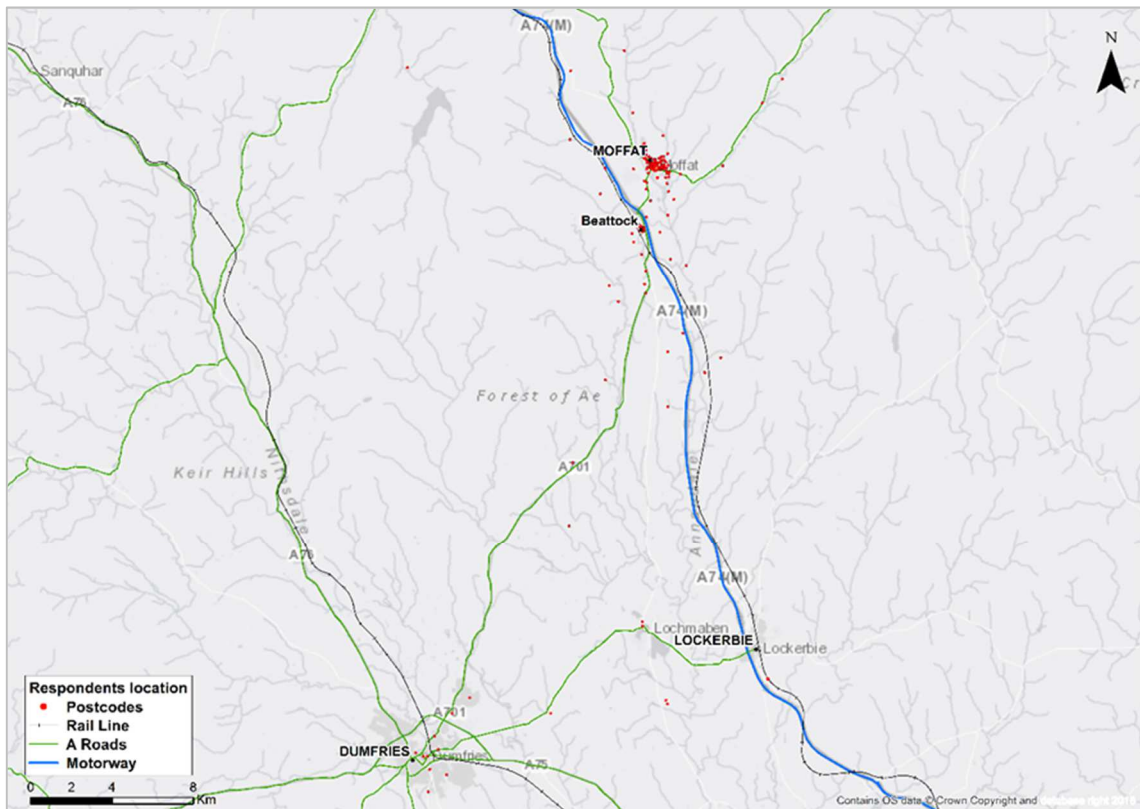


Figure L.1 Respondents Location

- L.2.7 Respondents were asked to state which area they lived in. All respondents answered this question. Moffat was the most common answer representing 72% (n=381) of the respondents (see Figure L.2). 15% (n=77) of respondents lived in Beattock and 13% (n=70) selected 'other'. Of these 70 respondents, 8 lived between Moffat and Beattock and another 8 lived in Dumfries. The next most common location was Elvanfoot where 7 respondents lived. There were 4 respondents from Lockerbie and 3 from Wamphray.

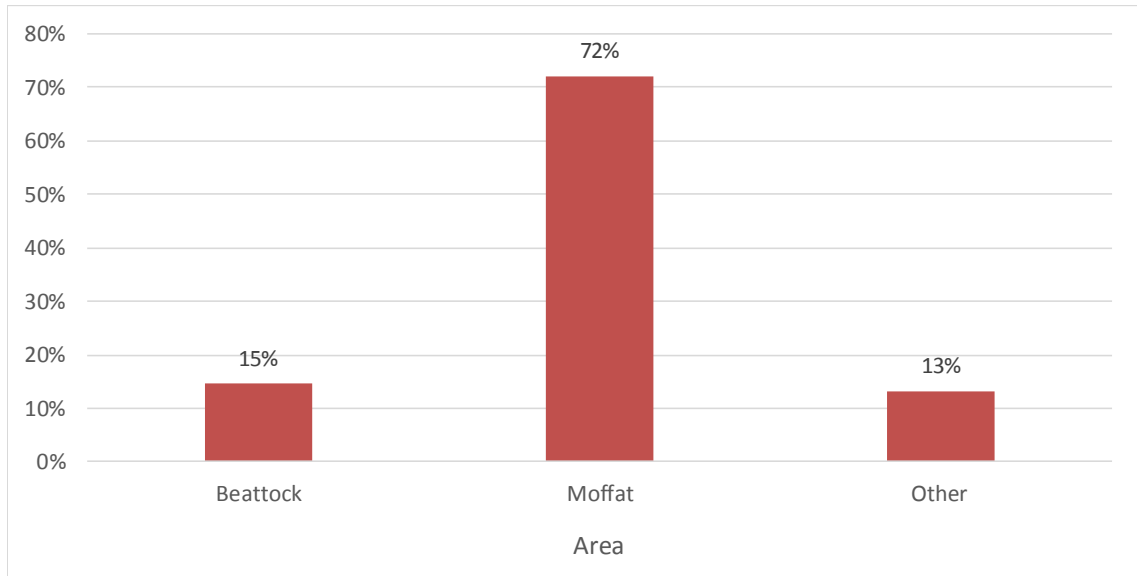


Figure L.2 Where respondents live

Q3 – Which mode of transport do you most regularly use when you go about your day to day business?

L.2.8 Respondents were asked to select which mode of transport they used most. All respondents answered this question. As shown in Figure L.3, car- based travel is the most common mode of transport. 69.5% (n=367) of respondents said they most commonly drove as their main mode of transport while 6.8% (n=36) said that they travel in the car as a passenger. 13.6% (n=72) walked as their main mode of transport, 6.1% (n=32) used the bus service and only 2.5% (n=13) travelled most commonly by train.

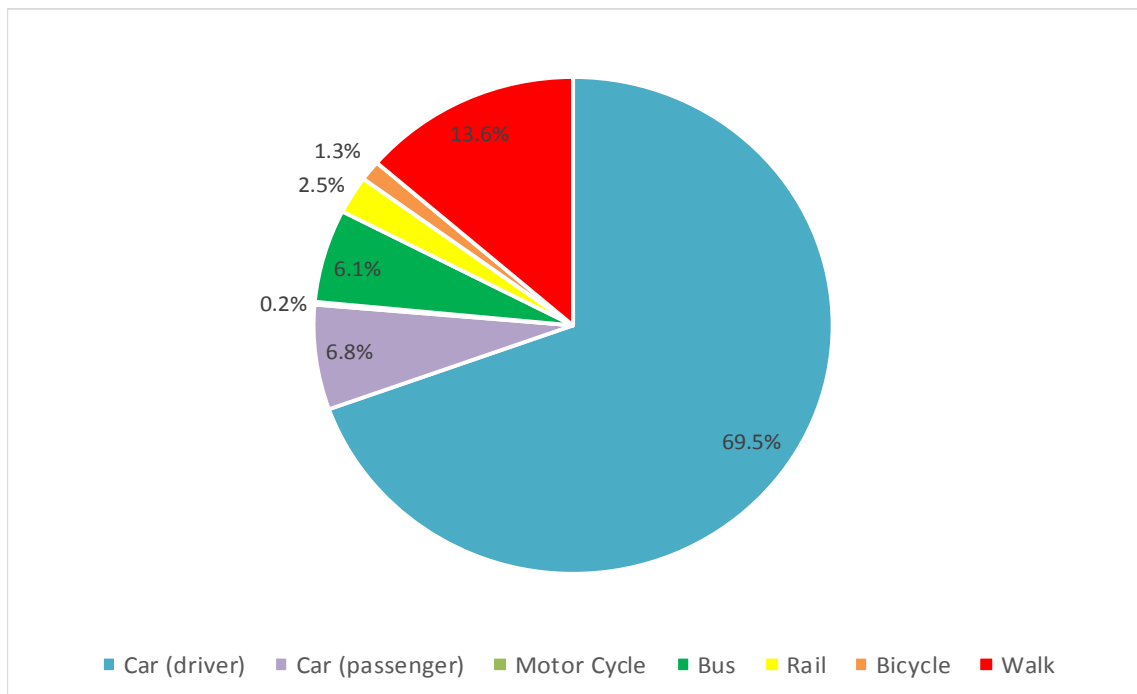


Figure L.3 Main mode of transport

Transport Problems

Q4 – We have identified a series of transport problems which affect the area. For each of these problems, indicate whether you feel this is a major problem, slight problem or not a problem for you.

L.2.9 There were several transport problems identified in the area. All of the respondents answered this question. The biggest problem for respondents was that the rail network was not easily accessible (see Figure L.4). 84% (n=442) said that accessing the rail network was a major problem. This was followed by 69% (n=366) of respondents stating that the poor integration between the bus and rail services was a major problem. The transport problem that respondents were least concerned about was the lack of safe cycle routes between Moffat and Beattock. Only 36% (n=190) of respondents felt this was a major problem and 23% (n=120) said that it was not a problem.

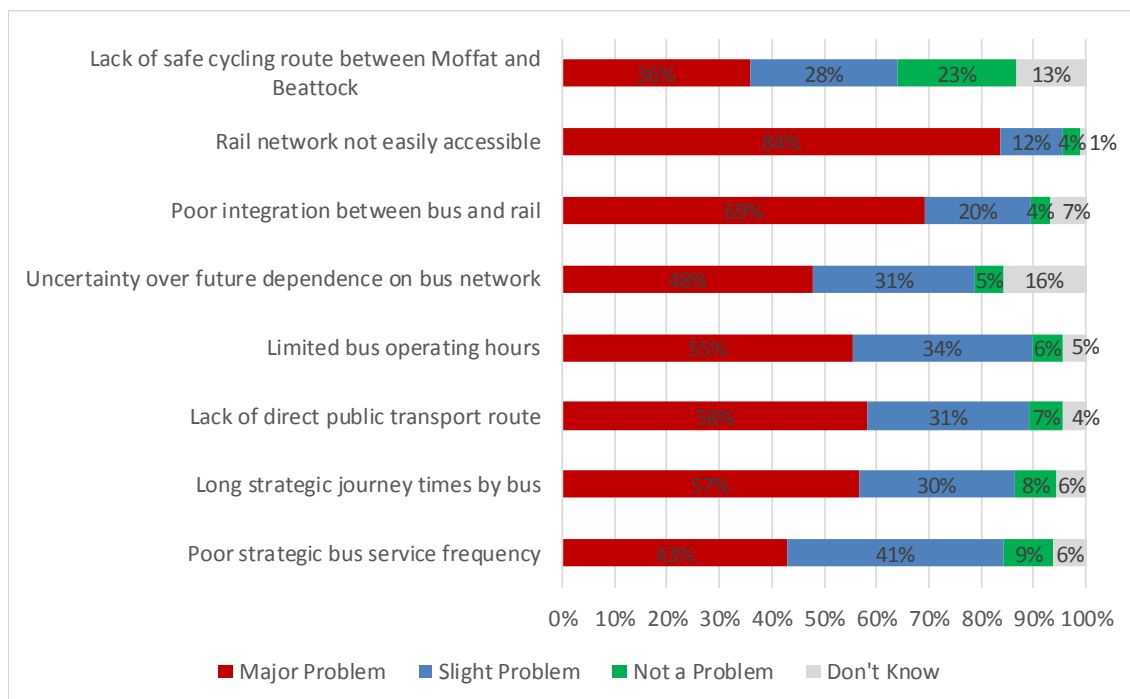


Figure L.4 Opinions of transport problems

Transport Options

L.2.10 There were three options selected at the end of the Part 1 Appraisal. These were:

- Option 1a / b: Adjustment of Service 380 to better integrate with rail times at Lockerbie and new express bus offering;
- Option 3 – Increased direct bus services to Edinburgh; and,
- Option 6 – Re-opening of Beattock Railway Station.

Q5 – Considering the options identified in the appraisal, what level of positive benefit or negative impact do you think each option will provide for travel to and from the Thornhill area?

L.2.11 Respondents were asked to state the level of benefit they believed each transport option would make to the area. 516 respondents answered this question. 91% (n=469) of respondents felt that Option 6 would have a major positive impact on the area. In comparison 30% (n=155) of respondents felt that Option 3 would have a major positive impact and 29% (n=150) of respondents felt that Option 1a/b would have a major positive impact. Figure L.5 shows the results.

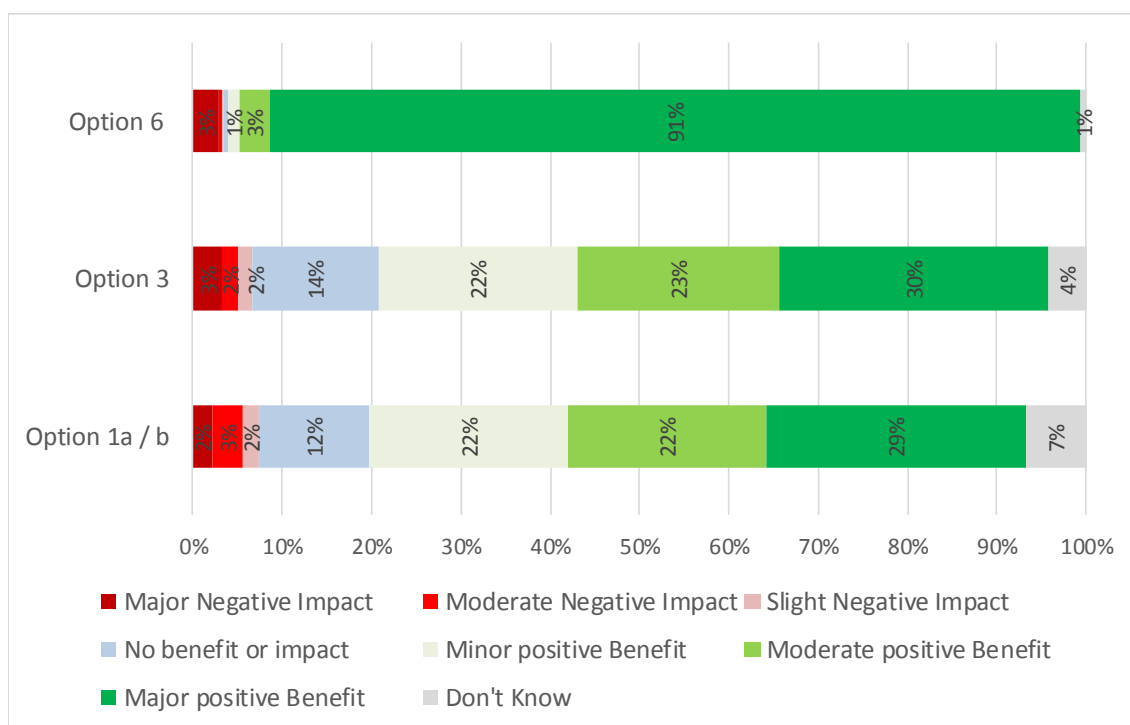


Figure L.5 Impact of transport options

Q6 - Which would be your preferred option for the future?

L.2.12 Respondents were asked to state which option they preferred. 516 respondents answered this question. 95% (n=488) stated that their preferred option was Option 6, to re-open Beattock Railway Station (see Figure L.6). 3% (n=16) of respondents preferred Option 3 and 2% (n=12) preferred Option 1a/b.

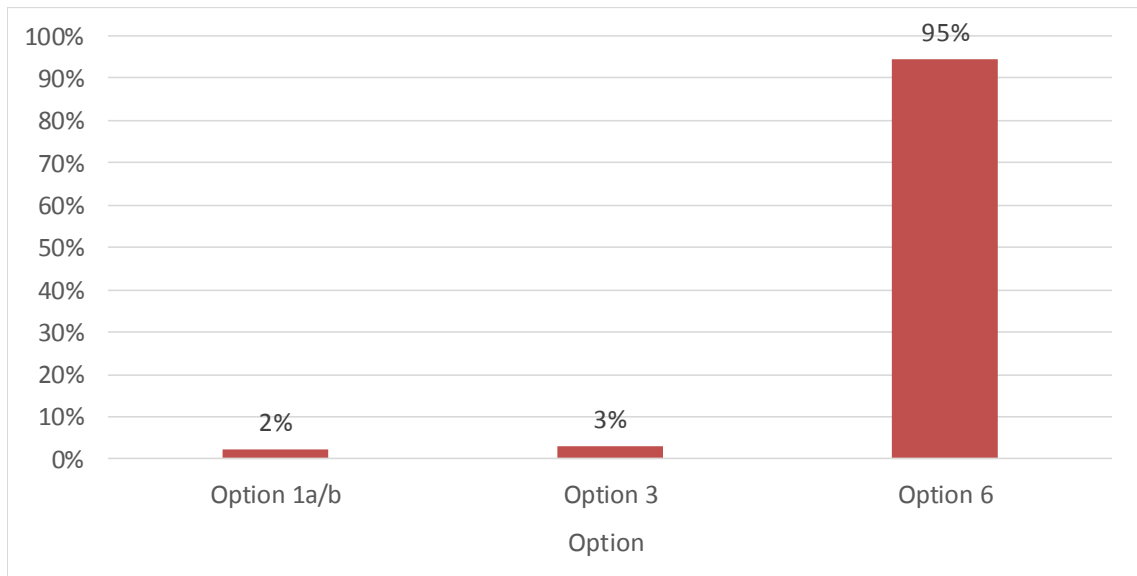


Figure L.6 Preferred option

Open Responses

- L.2.13 The survey provided respondents the chance to make open ended comments. There were two questions, one regarding their preferred option and the other collecting further comments on the study. The responses are summarised below.

Q6 - Please explain the main way(s) you think you and / or your community would benefit from your preferred choice option - 484 respondents answered this question

Re-open Beattock Railway Station

- L.2.14 In total, 456 of the respondents noted that they would like Beattock Railway Station to be re-opened. Respondents felt that the entire community would benefit from having local access to the rail network. It was noted that it would both increase opportunities for those in the area and attract more tourists. Various other reasons why re-opening the railway station would benefit the community are noted below.
- L.2.15 A few respondents noted that although they would like the railway station to be re-opened, the only way for it to be effective would be if the capacity of the trains increased. These respondents felt that the trains are currently full and that if Beattock was added to the service people would have to stand on almost every journey.

Convenience

- L.2.16 One of the major reasons respondents felt that the community would benefit from re-opening the railway station was that it would provide a faster travel option which would be easily accessible. It was noted that if people in the area want to travel north by train they have to travel south first, to Lockerbie, which wastes time and money. There were 116 comments noting that respondents desired faster travel links.
- L.2.17 Many people felt that the buses in the area were too slow and therefore chose to drive instead. However, the majority noted that due to the speed of rail travel, the train would be their first choice. Some respondents also noted that travelling by rail was the safer option, especially in the winter.

Local Economy

- L.2.18 There were 175 comments noting that re-opening the railway station would boost the local economy. Respondents felt that more tourists would visit the town as a result of better transport links. The town relies on tourists and increased footfall would be a huge benefit to local business owners.

Employment Opportunities

- L.2.19 Respondents noted that re-opening the railway station in Beattock would increase employment opportunities for those living in the surrounding areas. Many people in the area already commute to the central belt. Some of these respondents noted that the shorter commute would make a positive impact on their life as they could spend more time at home. It was felt that this would lead them to have a better quality of life.
- L.2.20 Respondents felt that with local access to the train network, the commute to the central belt would become a viable option for far more people. It was noted that this would “open up better” and more job opportunities.
- L.2.21 A few respondents also noted that with increased tourists’ there may be an increase in demand for local employment. This would also benefit the local community. A few respondents who were local business owners noted that better transport links would allow them to provide their staff with better training, improving the skills of those living and working locally.

Education

- L.2.22 Respondents felt that a huge benefit of re-opening the railway station would be that young people would have the opportunity to commute to higher education institutions. Some respondents noted that students from Dumfries and Galloway have a high university dropout rate compared to other areas in Scotland. However, currently there is no real opportunity for them to live at home and commute. Re-opening the railway station would allow these students to live at home and continue their education at a wider range of institutions. In addition to this, there were many respondents who were students and noted that they would visit home more often if a train station was opened.
- L.2.23 It was felt that school children in the area would also benefit from re-opening the railway station. Some respondents noted that children would be able to go on more school trips, benefitting both educationally and culturally, and the school would save money from not having to book expensive coaches. One respondent noted that they were a teacher at the local high school and that they felt the pupils would benefit hugely from having access to cultural events. They felt that the children in the area were at a disadvantage compared to other children in Scotland, especially in the central belt, and that re-opening Beattock Railway Station would help lower the discrepancy between schools.
- L.2.24 Another respondent noted that a lot of the teachers at the school are from Glasgow. Making their journey easier would attract them to stay in their jobs rather than switching to a school closer to Glasgow and hopefully attract more people to commute into the area.

Attract people to live in the area

- L.2.25 Respondents noted that the area has an issue with retaining young people. In general, it was felt that young people go to university and then move to places with better job opportunities. With better transport links these people may be attracted to move back to the area and commute to work.
- L.2.26 It was noted that re-opening the railway station would not only improve the retention of young people but attract new families into the area. The railway station would provide links to

employment, education, health care and leisure activities. Some respondents felt that all these reasons would go a long way in attracting new people to move into the area.

- L.2.27 It should be noted that there was a mixed response from respondents about the area turning into a commuter town. Some respondents felt that this would be a great benefit to the area and attract professionals which would boost the economy of the area. There were also two respondents that felt that this would not be beneficial for the town and it would lose its 'small town feel'.

Improved leisure and cultural opportunities

- L.2.28 Respondents felt that reopening the railway station would improve leisure and cultural opportunities for people in the area. It was noted that people would be able to attend evening events in the central belt and be able return home afterwards. There were also 14 comments regarding better shopping opportunities in the central belt and that with the train station these would be easily accessible. A few respondents noted that they would also be able to visit galleries and museums.

Socialising

- L.2.29 In total there were 37 comments from respondents regarding increased socialising opportunities. It was noted that re-opening the railway line would allow people in the area to socialise in the Central Belt or Carlisle and return home the same evening without needing to drive at any point.
- L.2.30 Some respondents also said that they would use the train service to visit friends and family who live further afield.

Environment

- L.2.31 There were 103 comments noting that re-opening the railway station would be the most environmentally friendly option. Respondents noted that they would be able to use the train instead of driving which would reduce congestion and improve air quality. A few respondents also said that they would no longer need to own two cars as they would be able to travel by rail instead.

Improved Accessibility

- L.2.32 In general, respondents felt that the train service would be much more accessible than the current bus service. People felt that when travelling with children, buggies or wheelchairs the train would be preferred. Buses in the area have limited wheelchair and buggy spaces and it can often be already taken, which deters people from trying to use the service. It was also noted that trains have toilets and services on them which buses don't. This also makes it a more attractive travel option.
- L.2.33 Respondents felt that another benefit of increased accessibility was the ability to travel independently. It was noted that people with disabilities, teenagers and elderly members of the community would all be able to travel independently and not rely on getting lifts from family members.
- L.2.34 Re-opening the railway station would open a range of opportunities to those in the area who do not drive. Respondents noted that not being able to drive massively restricts what you can do in the area. Respondents felt this was not helped by the fact that buses are infrequent and unreliable. Having rail access close by would be a huge benefit for these members of the community.

Health care

- L.2.35 A few respondents noted that they attend specialist health care services in the central belt. They would prefer to travel by rail as it is more accessible and less stressful.

Access to Airports

- L.2.36 There were 8 comments from respondents saying that a benefit of the railway station re-opening would be better access to airports in Glasgow, Edinburgh and Manchester.

Cost Effective

- L.2.37 11 respondents noted that travelling by train from Beattock would be more cost effective for them. This was mainly due to reduced fuel and parking costs.

Lockerbie Railway Station

- L.2.38 There were numerous comments saying that re-opening the railway station in Beattock would remove the need to drive to Lockerbie to access the rail network. This would save people both time and money.
- L.2.39 In addition to this, there were 44 comments about the limited parking facilities at Lockerbie Railway Station. Respondents felt that this was a major issue and added time to people's journeys. A few respondents noted that Option 1a/b would also relieve the parking issue at Lockerbie, but people would have to be encouraged to use the bus instead of driving.

Current bus service

- L.2.40 Many respondents felt that the X74 service to Glasgow was satisfactory and were quite happy using it, but the majority felt that the 101/102 Edinburgh service was not as good. There were 5 respondents that said if the Edinburgh service was as good as the Glasgow service, they would use the bus to get to Edinburgh.
- L.2.41 Some respondents noted that the current bus service is unreliable. There were also comments regarding the integration of the bus and train timetables. Respondents felt that they were not well timed which often resulted in long waiting times.

Bus Options

- L.2.42 A few respondents felt that re-opening the railway station would be a waste of money. It was also noted that the train fares would be expensive and therefore people would continue to drive or travel by bus. One respondent also noted that there were a lot of elderly people in the community who would probably continue to use buses as they can use their concessionary card.

Q7- Do you have any further comments to make on the study, and the interim conclusions presented at this stage? – 215 responses

Re-open Beattock Railway Station

- L.2.43 There were a further 45 comments from respondents stating that they would like the railway station in Beattock to be re-opened.

Local Economy and Tourism

- L.2.44 In total there were 43 comments regarding the benefits re-opening the train station would bring to the local economy. This was mainly due to increased tourism in the area and being easily accessible for visitors.

Education and Employment Opportunities

- L.2.45 There were a further 28 comments regarding the education and employment opportunities that would come from re-opening the railway station in Beattock.

Environment

- L.2.46 10 people commented on the environmental benefits of re-opening the railway station. This included; reduced congestion, improved air quality and promoting active travel to the railway station.

Active Travel

- L.2.47 There were 13 comments from respondents noting that active travel routes in the area need to be improved. Some respondents noted that if the train station were to re-opened, there would need to be an integrated path to encourage people to cycle to the station instead of driving.

Issues with bus service

- L.2.48 In general, respondents noted that the bus service in the area was not adequate. Although some people felt that the X74 service to Glasgow was very good there were other comments noting that it was unreliable and often late. Respondents were not satisfied with the 101/102 service to Edinburgh. There were also some comments noting that bus fares were expensive.

Station cost

- L.2.49 There were 6 respondents who felt the cost of re-opening the station could not be justified and it would be a waste of money. Some respondents also noted that they thought the estimated cost of the station seemed very high and would have liked to have seen a breakdown of this cost.

L.3 Beattock Station Action Group

- L.3.1 A meeting with Beattock Station Action Group was held on 24th January 2019, prior to the public event. A phone call was also undertaken with the group on 14th November 2018 as part of Transport Scotland's South West Scotland Transport Study. The phone call was undertaken by members of the team working on this study, and for completeness is included here as the same key messages were discussed.

One-to-one phone call (14th November 2018)

Background

The Beattock Station Action Group is campaigning to re-open the station at Beattock to serve the Beattock and Moffat area. SWestrans has funded a STAG appraisal for the reopening of the station, which is currently at STAG Part 2 stage.

- L.3.2 The group's original aims & objectives when formed in 2012 were:
- To reinstate a station at Beattock (park & ride + integrated bus service from Moffat);

- Give the local community better work opportunities by enabling people to commute (45 minutes from 3 major cities);
- Increase tourism and benefit local businesses by making it easier for people to visit the area;
- Enhance people's quality of life by making it easier for them to travel outside the area for jobs, education and leisure activities;
- Improve the environment by reducing people's dependence on the car;
- Revisit the Freight Facility option for Beattock; and
- Economic regeneration of Beattock & Moffat and surrounding region overarching all of the above.

L.3.3 In the 2016/17 Moffat and Beattock Community Plan, the station in Beattock was identified by both local communities as very important to improve connectivity and allow people to have a greater choice in where and how they travel, as well as supporting the local economies.

General

L.3.4 The current transportation links provide limited access to employment and education opportunities for people in Beattock and Moffat, especially for those without access to the private car. It is difficult to stay in the area and continue onto higher education resulting in many young people choosing to move north. It was noted that there is a general feeling that people in the area want the option to commute to educational facilities while remaining at home. Access to health and social care were also highlighted to be problems.

L.3.5 It was acknowledged that the countries 'green' agenda and noted that people in the study area generally opted to travel by private car rather than more sustainable modes. For the large part this was felt to be a lack of convenient and frequent public transport links and limited safe active travel routes.

L.3.6 It was explained that there was a desire in the area to have access to a transport network for the 21st century. That is, a system that is appropriate and can serve the local community effectively. The people in the area don't want to live in a shrinking, dormitory town but instead want to grow and encourage people to live, work and visit the area. However, there is a general feeling across the area that rural communities in general are forgotten about in many investment decisions.

Rail

L.3.7 A major problem for the action group is that there is very little will to change the West Coast Main Line (WCML) which is felt to limit access for local communities. There is nearly 48 miles of railway between Lockerbie and Carstairs with no station, leaving residents of rural communities in Beattock, Moffat and the surrounding areas having to travel up to 20 miles to reach the nearest station.

L.3.8 It was noted that any region of Scotland would value equality of access to all transport systems as a reasonable right to choose their preferred form of community transport. However, there is a serious shortfall in the Government investing in access to stations for rural communities in the south of Scotland. Rail transport has developed significantly elsewhere, (seeing a 93% increase in rail travel in the last 15 years).

L.3.9 Rail transport has developed significantly elsewhere, allowing many communities to grow but it is felt that the south West of Scotland has not had the same opportunity. It was noted that re-opening Beattock station would not be in competition with Lockerbie station, but in addition to it. There would be very few track changes needed to implement the station itself with the

additional opportunity of adding a Park & Ride element to the station using the 6 acres of available land at Heritage Park.

- L.3.10 It was noted that for those traveling north from Dumfries to Glasgow & Edinburgh, a Park & ride at Beattock as an additional option would ease the commuter parking issues which have plagued Lockerbie for some years. The A709 route to Lockerbie or the A701 route to Beattock would have a similar car journey time and traveling north by car to Beattock seems a logical choice to make.
- L.3.11 Opening a station in Beattock would bring resources into the area to provide better support for the growth of the community. Both Beattock and Moffat see this as a huge opportunity for their communities. It would provide much improved access to employment and education by allowing access to three major cities in less than an hour. It would vastly improve people's lives in the area and they estimate would serve 76,000 passengers a year.
- L.3.12 Beattock and Moffat both rely heavily on tourism. It was noted that the tourism industry could expand with a new railway station through attracting a greater number of visitors to the area, highlighting opportunities such as the area's heritage history and walking and cycling opportunities. It would allow better access for walkers into the area and would also open up the opportunity for the potential running of steam services'.
- L.3.13 Around 10 years ago (March 2008) there was support for investment in a timber storage freight facility at Beattock to help facilitate moving timber off the road to reduce road congestion and road maintenance required due to the impact of the timber lorries. Plans were drawn up to show how this would operate, including utilisation of the old Beattock to Moffat line. The surrounding land level would have to be raised to the same level as the track and the track would have to be extended across the river. It was predicted that this would bring approximately 50 new jobs to the area. At the time there was a lot of interest from the timber industry for this and a grant had been obtained. It was a £2.9 million project. Beattock would have been the best geographical choice for a storage facility but there was a delay in the project moving forwards, and subsequently the potential operator withdrew and plans did not progress further. Martin felt that there was still considerable potential for this.

Bus

- L.3.14 The A701 was felt to be an effective route which is well looked after. The X74 bus run by Stagecoach makes particularly good use of this road. It runs from Dumfries to Glasgow through Moffat and is a key service for people in the area although there are concerns regarding accessibility - it was noted that due to the coach style of bus, the steps are very steep which can limit access, particularly to the elderly. There is a desire for a more frequent direct bus to Edinburgh as the 101 service has been cut to only operating twice daily. This impacts the amount of time that people can spend in Edinburgh and makes it less attractive for trips.

Face-to-face Meeting (24th January 2019)

- L.3.15 The station action group presented their findings from a survey in 2012. They explained that there were various reasons that locals wanted a railway station in Beattock, but according to their study the main reason was for leisure purposes. This seemed to be the answer particularly among younger people. It was also noted that many people in the area get the train from Lockerbie to get to Manchester Airport and a station in the town would mean that they did not have to initially travel to Lockerbie.
- L.3.16 Car sharing is not big in the area, so people tend to travel in their private car. The survey reported that a high percentage of people would want to use the train service weekly. In the area there are many people that commute by driving to Glasgow and Edinburgh. There would be multiple benefits of rail access for commuters including a shorter travel time, the ability to work on the train, less reliance on the car and less stress.

- L.3.17 The train is also far more accessible for elderly and disabled people. It would provide independent travel for disabled people which is much more difficult on a bus. It was felt that elderly people in the area would pay concessionary tickets to use the train for the ease of travel and shorter journey times rather than the free bus. This could be due to the relative wealth in the area.
- L.3.18 In addition to having a positive impact on elderly people's life, the train would significantly improve the lives of young people in the area opening up leisure, employment and educational opportunities.
- L.3.19 The group discussed the emissions that would be saved from reduced car usage.

Additional comments

- L.3.20 The groups showed figures from 2014/2015 that suggested that a station in Beattock would be used annually by 86,000 people. They also noted that Lockerbie station has had a 48% passenger increase in the last 5 years.
- L.3.21 They also noted that discussions had been had between the group and Abellio regarding the potential to run a train from Glasgow to serve Beattock. It was suggested that the community could raise money to fund the shuttle bus service themselves through significant funding from wind farms. They had also considered cycle paths to the old station site.

L.4 Visit Moffat

- L.4.1 A meeting with Visit Moffat was held on 24th January 2019, prior to the public event.
- L.4.2 Visit Moffat have been running their project for 15/16 years as there is a tourist demand to visit Moffat. The area is relatively small, affluent and elderly and the future is dependent on more visitors coming. It was noted that the Scottish Improvement District were in discussion with Transport Scotland about how to increase the access to the area. It was felt that the need to have a car can put people off visiting, especially international visitors who would have to hire a car. A station in the area would encourage more visitors to come, be more convenient and be greener. It was also noted that the signage on the A74(M) was poor and did not encourage people to come off the road and into Moffat.
- L.4.3 There is more accommodation in the area, per head, than in Edinburgh so there is a capacity for more people to visit. The area doesn't have an issue in the summer attracting visitors but there can be problems in the winter.
- L.4.4 A shuttle bus from Beattock to Moffat would have to be part of the train journey package. It was noted that the area does have a local taxi company that could possibly provide this link and there are currently buses that go between Beattock and Moffat. Visit Moffat believe that it would be simpler to explain to people arriving at the airport how to get a train and shuttle bus than the current travel options.
- L.4.5 There is no way to determine how many people are not coming to the area because of poor transport links, but the group believe that it has a significant impact on whether people visit or not. Walking festivals in the area used to be attended by 400/500 people but the numbers have reduced to about 75. This is one example of an event that they believe could attract more. It was noted that Beattock hill was a popular place to go walking. They are hoping to host another walking festival in October and integrate it with some history of the area to make it more engaging and reach a wider audience.

L.5 Moffat Academy

- L.5.1 A meeting with pupils (representing the wider student body) and a teacher from Moffat Academy was held prior to the public engagement event on 24th January 2019.

- L.5.2 Due to the location of Moffat, the school children feel that they are disadvantaged due to the lack of access to major cities. They thought that opening the station at Beattock would remove the sense of rural isolation in the community. They highlighted many areas in which they believed a train station could help. Issues with mental health, especially among children, were mentioned. It was felt that the lack of access to bigger cities could have an impact of people leaving due to a feeling of being trapped. For example, there are people in the area who are dependent on drugs and alcohol. Opening up other opportunities to these people who are struggling could have a positive impact and end their feeling of isolation and lack of purpose.
- L.5.3 Currently, people from Moffat can travel to Glasgow on the X74 but it was felt that the journey time was long, and it was not easily accessible. They can also access Glasgow/ Edinburgh by driving to Lockerbie and then getting on a connecting train. However, it was noted that there are issues with limited car parking spaces at Lockerbie station, especially for those with limited mobility. There is also a bus service to Edinburgh, but it has been reduced recently due to funding cuts.
- L.5.4 Access to cities in both Scotland and England would provide the community with better access to music events, theatres, sporting events and social opportunities. For example, the pupils noted that there are talented sports men / women and musicians at Moffat Academy who travel all over the country to access the best facilities and coaching. A train station would remove the need for teenagers to rely on their parents transporting them back and forward by car. For example, one of the pupils presenting explained that he travelled to Glasgow twice or three times a week to do indoor climbing.
- L.5.5 The older pupils noted that they tend to go to Hamilton and Glasgow for socialising. They would like to go to Carlisle but the bus and train are too expensive and a lot of hassle.

Education

- L.5.6 Some of the pupils attending Moffat Academy live in Annan. For these children the journey time to school can be over an hour. They get the bus from Annan to Dumfries and then another bus from Dumfries to Moffat. A train station would significantly reduce the travelling time for these children and provide them with an alternative travel option.
- L.5.7 Many of the teachers working at the school are from Glasgow and they share cars every morning. The Academy is a highly achieving school and placed in the top 30 schools in Scotland last year. The head teacher felt that there was an opportunity to attract more people to go to school in Moffat but the transport links make it difficult for children to access it. The school is having some difficulties as the school role is reducing, resulting in curriculum opportunities reducing. Some pupils will travel to Lockerbie and join in with classes there when Moffat Academy doesn't offer the subject they would like to study. This system relies on teachers driving children to Lockerbie and waiting. This is a significant drain on both staff and pupil time.
- L.5.8 65% of the pupils at Moffat Academy go on to higher education with the majority of these pupils choosing to go to Edinburgh or Glasgow. A train station at Beattock would open up the opportunity for people to stay at home and study in the central belt. This would be a huge advantage for less affluent families as accommodation costs would be significantly reduced. The pupils noted that the university dropout rates for people from the area is high. There is a possibility that the dropout rates would decrease if pupils had the opportunity to stay at home.
- L.5.9 It was noted that if pupils wish to study vocational subjects, they would tend to go to Dumfries College.

Local community

- L.5.10 The local economy is very important to the area with a number of shops, cafes and restaurants. A railway station would have a positive impact on the economy, providing easy access by public transport and reducing visitor's dependency on having a car. It could also increase the tourism opportunities in the area and increase the number of jobs available. For example, the borders

railway resulted in an 8% increase in tourism employment in the area. This provides job security which encourages people to stay and live in the area. It was noted that there is large amount of people in the area who are self-employed.

L.5.11 Generally, it was noted that broadband in the area could do with being improved.

L.6 SWestrans and Stagecoach

L.6.1 Key points from the discussion were:

- Stagecoach's resources work hard in the Dumfries and Galloway region, with buses and drivers often providing the resource to operate a number of differing services over the day, with little 'down time' at a depot. Operations need to be heavily resource intensive in order to enable the commercial viability of services.
- Stagecoach described the commercial viability of their services in the region as 'shaved to the bone'
- Given the resource intensive nature of operations and the inherent logistics of operating a range of services across the day, minor changes to a single service could have major consequences across a range of services.
- Given this fragile nature of existing operations, Stagecoach would not be willing to take on any services which were required to be operated without subsidy. Consideration would be given to operating services if subsidy were available but they would not want to take on any commercial risk
- In general, as a bus operator, Stagecoach seek to provide connections between their bus services. Creating better integration with rail services was seen as a measure that could actually reduce their patronage overall. While they may gain additional passengers using the bus to access the rail network, overall they may lose out in passenger volumes as passengers utilise rail for onward travel as opposed to connecting bus services. Therefore, providing improved bus connections to the rail network was not seen as a positive for their operations.
- In terms of Lockerbie Railway Station, the issues of parking at the station were noted – with limited parking capacity available, therefore improving access by other modes had potential.
- In relation to improving access to the rail network from Beattock, SWestrans noted that a far greater number of rail services stop at Carlisle compared to Lockerbie and therefore improving access to Carlisle Railway Station rather than Lockerbie Railway Station would provide greater accessibility benefits.
- SWestrans noted the potential benefits of operating a 'dial-a-bus' type service providing connectivity to rail service may have good potential. The Community Planning Partnership have endorsed a strategic, coordinated and integrated approach to social/community transport service delivery across the partnership through the development of a Public Social Partnership and the potential for this could be raised in this context. It was noted though that no bus operator grant would be available to support the operation of such a

L.7 SWestrans, Dumfries and Galloway Council Officers (Transportation, Planning, Environment and Economic Development officers)

L.7.1 A workshop was undertaken with key officers (transport, economic, environmental etc.) from the Council and SWestrans on 8th February 2018. Key points from the workshop were:

- Agreement of the difficulty in encouraging any existing rail operators to stop at Beattock given Virgin Trains and TransPennine's commercial priorities.

L.7.2 The fact that, in the short term, calling at Beattock would probably be at the expense of a call at Lockerbie.

L.8 Network Rail and ScotRail

L.8.1 Two key option development tasks were undertaken in relation to the rail option (Option 6 – the re-opening of Beattock station) before engagement was undertaken with the rail industry:

- **Engineering Feasibility Work** – which involved a site visit to Beattock to establish the potential viability for a railway station within/close to the village with key considerations being station access from the road network. A paper was produced which was provided to the stakeholders for comment and is provided in Appendix M ; and
- **Development of a potential timetable for the WCML** which included a stop at Beattock. The timetable was shared with the stakeholders for comment and is included in Appendix G.7.

Engineering Feasibility Work:

- A site visit, undertaken by members of our project team, investigated the feasibility of reinstating a station at Beattock. Three potential sites were considered in terms of station access, available land, and railway regulations and operational issues: the former station site, a site to the north of the village and a site to the south of the village. The site to the north was considered to have some difficulties, both with railway works and access and no obvious advantages, so was discounted. The former station site and a new site to the south of the village could both be considered as possible station sites, with a clear set of requirements and criteria to inform the decision as discussed in, as presented in Appendix M .

Timetable Development:

- As considered in the Part 1 appraisal, in the medium term, the potential for existing TransPennine service to serve Beattock has been considered. In the longer term, a completely new Stirling – Carlisle service has been considered based on an opportunity presented in the Scotland Route Study.
- A notional timetable was developed which included a stop at Beattock in existing services (to be used to test the impacts of the additional stops on existing users, using the rail industry standard MOIRA software) with an indicative timetable for a new Stirling – Carlisle service developed for the longer term possibility. Both timetables were passed to Network Rail, TransPennine, Transport Scotland and Virgin Trains for consideration and agreement as a sound platform for testing, before any analysis was undertaken. Both timetables are presented in Appendix G.7.

L.8.2 The timetable work established that:

- That it has not been possible to offer a plausible train service using the existing (May 2018) train services;
- There may be opportunities to provide train services that could call at Beattock, but this will be in the longer term and part of a wider requirement, as envisaged in the Scotland Route Study; and
- Notional train services have been prepared for appraisal purposes only.

Network Rail noted that:

- They had the Technical Note provided on the potential station location for Beattock and were content that the level of analysis is appropriate for the current stage of development and has captured the issues for consideration going forward.

TransPennine:

- The tightly constrained current path from Manchester International Airport to Edinburgh
- The number of intermediate calls in northbound Edinburgh trains is already severely constrained (see Table G.1) and TransPennine indicated, “*an additional call at Beattock would not be desirable*”, and indeed on the current times would not be able to be accommodated.
- There is a little flexibility in the timetable southbound with some spare time at Carlisle but there is difficulty in the interrelationship with the GSWL services
- Their market based view is that their services are long distance high-speed services. Additional speculative calls at new and small wayside stations are not part of their concept.
- The inclusion of Motherwell calls in Glasgow services (clearly commercially a much better case than Beattock) has been with some difficulty and has taken several years to achieve
- The only way a call at Beattock could be accommodated would possibly be at the expense of a Lockerbie call, but this would significantly reduce the service provided at Lockerbie, especially as it has not been possible to provide an hourly service.

Virgin Trains:

- Whilst understanding the detail behind the timetable provided, the time penalty for calling at Beattock would significantly impact upon WCML Anglo Scottish journey times, which would be detrimental to the competitiveness of rail against other transport modes (air in particular).
- As a result, Virgin Trains would not support any WCML services to/from Euston calling at Beattock in the future.

L.9 South Lanarkshire Council

- The 2017 Clydesdale Transport Study provides information relating to Travel-to-Work Patterns of South Lanarkshire residents.
- Providing calls by existing TransPennine services that pass Beattock station was not felt to offer any benefit in the short term to South Lanarkshire residents - the vast majority of travel to work patterns of local residents with the exception of ‘no fixed place of work’ is in a northerly direction.
- There may be benefits in providing improved rail services southbound for recreational activities, however, there is no data available to comment on this.
- In the long term it was considered that a Stirling – Carlisle service may be of some benefit to a minority of users from South Lanarkshire who would choose to utilise connecting rail journeys via Glasgow/Edinburgh. Edinburgh is the second most popular named destination in terms of employment and therefore a long term benefit may encourage a modal shift in terms of bus and car travel patterns for typical weekday travel patterns.

- Glasgow and Lanark were noted as the most popular choice of destinations in terms of Retail, Leisure and visiting friends and relatives. It is therefore not unreasonable to consider that a railway station at Beattock would encourage alternative forms of transport for these purposes outwith a typical working week.

Appendix M Option 6 - Potential Station Sites – Site Visit Findings

M.1 General Points

M.1.1 It was important prior to the site visits to take cognisance of the underlying rail regulations and standards, in respect of new or relocating stations, in order to ensure these are fully considered.

M.2 Railway regulations and standards concerning the location of stations

M.2.1 The location of stations is dictated by a range of factors including local markets and physical access to the railway, which are clearly site specific.

M.2.2 The railway industry has standards that govern the location of new stations in relation to **gradients** and **curvature**. These are published in a number of documents.

M.2.3 The first document in the process is "[Investment in Stations: A guide for promoters and developers](#)" published by Network Rail in December 2014 as part of the Network Route Utilisation Strategy (RUS) programme. As it is a RUS publication it has been developed with the wider rail industry, including funders, and is approved by the Office of Rail and Road (ORR).

M.2.4 The document is comprehensive and sets out the issues that need to be considered when proposing the relocation of a station or the building of a new one. It includes a specific reference to the [Railway Group Standard GIGN7616](#) in respect to acceptable gradients and curvature for new station sites.

M.2.5 Section G4 refers to track gradients through proposed station sites:

- Section G 4.2.2 states that: "it is considered good practise to locate platforms on gradients not steeper than 1:500."
- Section G 4.2.8 sets out the points to consider if a new platform is to be built on a gradient steeper than 1:500.

M.2.6 There is no prohibition on placing a new platform on a gradient steeper than 1:500, but some thought needs to be given to the consequences. These points need to be considered with regard to the potential station sites, initially if they are relevant to the choice of site and, if necessary, at the detailed design stage.

M.2.7 The issues that arise with platforms on curved track are generally around the platform/train stepping distances, which can be widened or raised / enlarged as a result of the interaction between straight carriages and curved platforms. These issues are not insurmountable, but it is preferable to avoid them if possible.

M.2.8 The relevant standard is GI/RT7016 which is quoted in GIGN7616 Section G 4.1:

- Extract 2.1 Station platforms shall not be located on horizontal curves with radius less than 1000m.
- Extract 2.1.5 GC/RT50221 requires that the normal limiting design value of cant adjacent to a station platform is 110mm, with an exceptional limiting design value of 130mm.

M.2.9 In summary, new stations should be ideally located on straight track but can be located on track with a horizontal curve of more than 1000m (but not less) and ideally on track that is level (less steep than 1:500) but can be located on track where the gradient is steeper than 1:500.

M.3 Railway operational issues

M.3.1 There are detailed implications in the location of any new station on the network particularly its impact on the operation of trains. Two important issues are:

- The special location of a station in respect of the signalling sections and how that impacts on headways, especially, but also junction working;
- The interface with signalling equipment and point work and the detailed sighting of signals.

M.3.2 These will be considered in the context of the station sites.

M.4 Access

M.4.1 Station sites need to be accessible to the public road network, which also includes public footpaths and footways. Sites that are impractical to access from the public road network will be discounted. The other important consideration is the location of the station in relation to the community it is intended to serve.

M.5 Platform Lengths

M.5.1 Platforms are required to be of sufficient length so that all the coaches, and thus doors of the trains that are expected to regularly call, are on the platform.

M.5.2 As it is envisaged that Beattock station would be served by either TransPennine Express trains (in the medium term) or a bespoke Stirling – Carlisle service (in the longer term as per the Opportunity to Travel noted in the Scotland Route Study), these two options dictate the platform lengths.

M.5.3 The new TransPennine Express trains are 5-car Civity Electric Multiple Units (EMUs) built by CAF in Spain. These 5-car trains are stated to be 118m which is in line with other UK regional multiple units. With the 5m stopping tolerance this requires a 125m long platform, which will clearly be sufficient for a 3 or 4-car regional EMU on any future Stirling – Carlisle ScotRail service. Passive provision for 6-car operation (up to 150m) should be made in the detailed design.

M.6 Site Visit Findings

M.6.1 The potential station sites were visited on 6th November 2017. This section details the findings and draws on published railway information in its commentary, including railway gradient charts. Mileages that are quoted are from the published information including their Sectional Appendices and Quail Maps.

Gradient

M.6.2 Beattock is at the bottom of a 10-mile northbound climb with gradients varying around 1:75. The start of the real climb (at 1:88) occurs at about 39 mile 70 chains (39.70), which is to the south of points out of the down (northbound) loop (40.03) and north of the points out of the up (southbound) loop (39.64). South of here the gradient is 1:260 for a short distance, around the former station site followed by a short stretch of 1:174 from 39 miles, whereas the ruling gradient for the previous three miles is 1:202.

Curvature

M.6.3 The line here is broadly straight with the only curves being on the down (northbound) loop around the site of the former platform (viewed from old photographs).

Access

M.6.4 There are three possible sites where road access to railway would be available (as shown in Figure M.1):

- Site A: In the general vicinity of the underbridge over the C road to the south of the village (south);
- Site B: At former station site (closed in 1972) accessed off Woodlea Court; or
- Site C: In the general vicinity of the narrow and weight restricted overbridge carrying a C-class road to the north of the village.

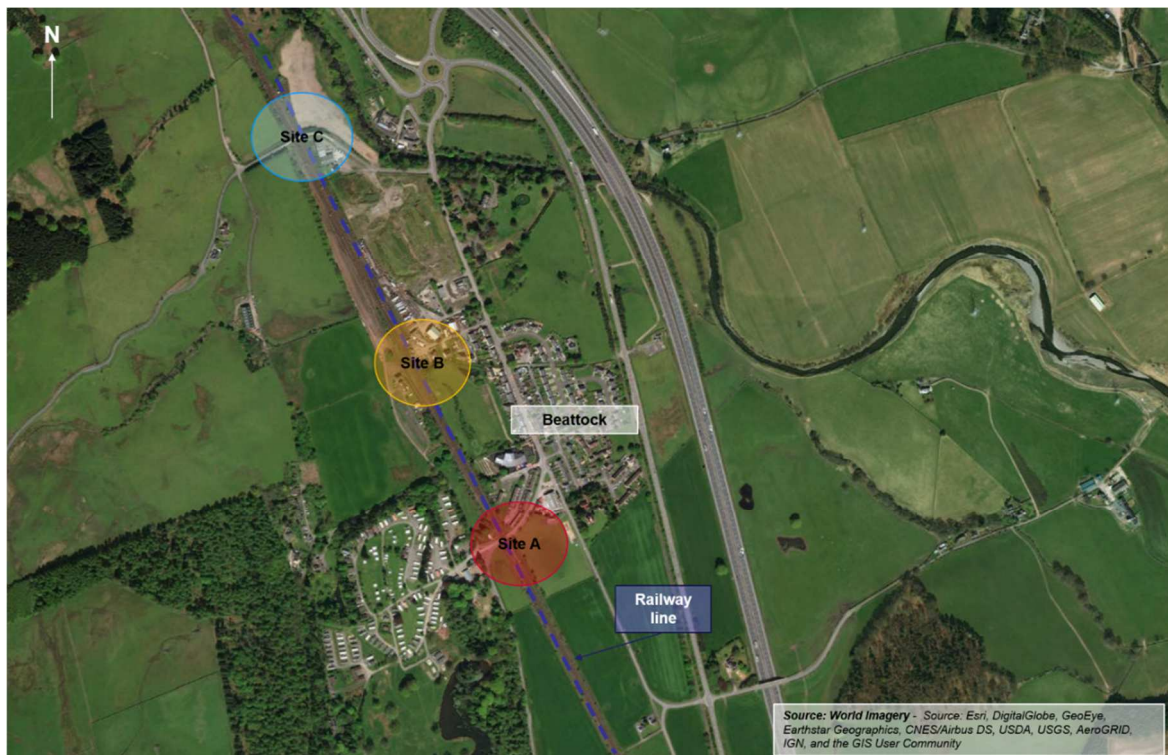


Figure M.1: Beattock Railway Station Potential Locations

M.6.5 In terms of access to the sites:

- **Site A** (see Figure M.2) has sufficient space for a car park but would require users from Moffat to route through Beattock village centre to access the station. There are no physical constraints on this site and the greenfield nature of the site offers the opportunity to put in place a facility that could be expanded over time to meet increased demand. Some minor upgrades to existing footways would be required as well as rationalisation of the existing access to the caravan park.



Figure M.2: Beattock Railway Station Locations – Site A Access

- **Site B** access is via Woodlea Court but the road narrows mid-way and would require widening (as shown in Figure M.3 and Figure M.4) to allow for suitable access and to bring the road up to an adoptable standard. Sightlines at the junction of Woodlea Court and Main Road are restricted and would need to be kept clear of obstruction. The station site itself would have limited area available for parking and bus turnaround, although there may be Network Rail land available (but this would require relocation of the existing engineering facilities located here) or use of the Heritage Park land to the south.

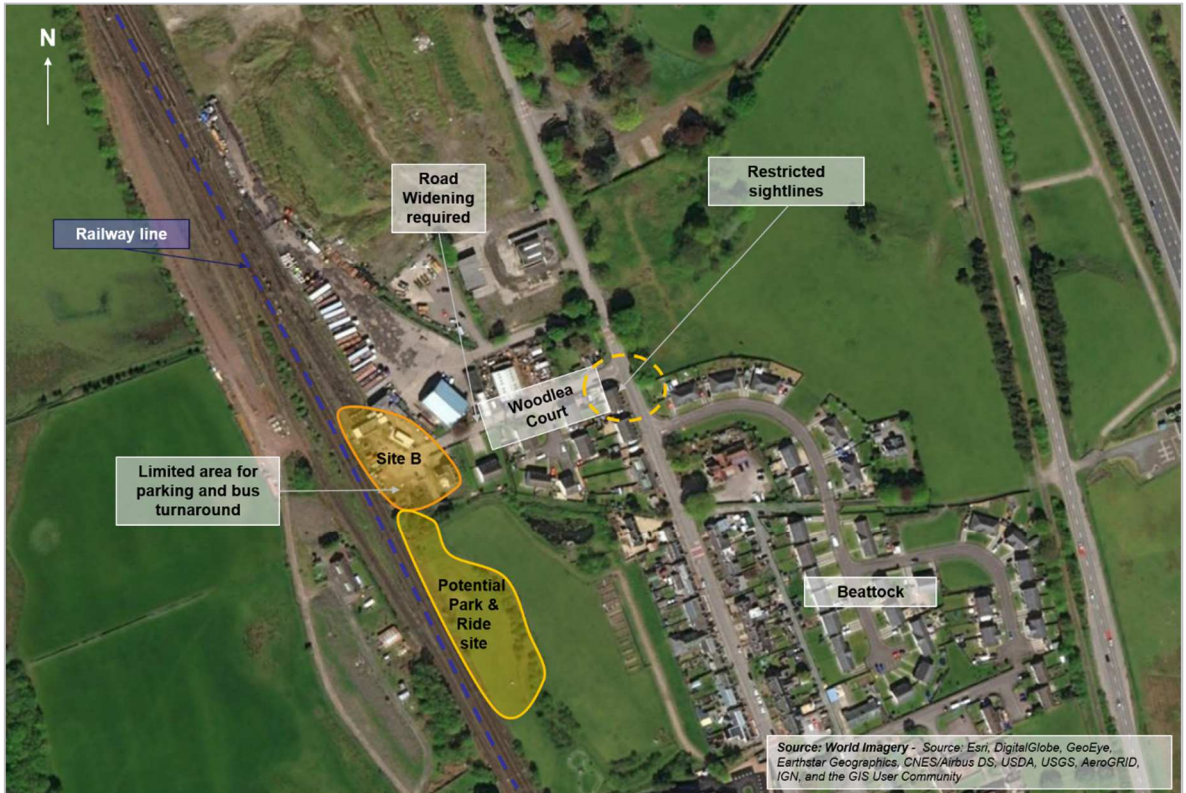


Figure M.3: Beattock Railway Station Locations – Site B Access



Figure M.4: Beattock Railway Station Locations – Site B Access (Woodlea Court)

- **Site C** is located in the general vicinity of the overbridge over Crooked Road to the north of the village. The site has potential access off Crooked Road (see Figure M.5) which shows the narrow overbridge) and visibility from the potential access point would be

good. However, the existing rail overbridge on Crooked Road has a 3.0m wide carriageway and is controlled by traffic signals. A new station at this location would likely intensify traffic movements over the bridge which may lead to unacceptable delays and congestion. This would inevitably require a new bridge structure. There are no major physical constraints on the site but platforms would need to be placed skewed to be either side of the bridge on the railway. In general, the site's location is remote from the village.



Figure M.5: Beattock Railway Station Locations – Site C Access over narrow overbridge

Operational issues

M.6.6 In terms of operational issues:

- **Site A** is on the double track section between the entry signal (MC731) and the entrance into the down (northbound) loop. There would not be a need to relocate existing railway sidings but the platforms would be on track that includes the trailing crossover;
- **Site B** (the former station site) is on the up (southbound) main line to the south of the up loop, but could have platforms located on both the down (northbound) main and down loop. The potential for the northbound platform to be sited on either the loop or the mainline offers some possibilities in terms of limited impacts on the capacity of the railway line (the southbound platform would need to be located on the main line). Car Parking would be constrained – although potentially land in Hermitage Park could be available - and require some land take and the station itself is close to the Woodlea Court residential area.
- **Site C** would require the down platform to be situated to the north of the overbridge as the point work for the north end of the down (northbound) loop is located to the south of the bridge. The up (southbound) platform could be located to the south or the north of the overbridge as the up (southbound) loop extends under the bridge and could

possibly be located on either or both of the up main and up loop lines. This may necessitate the removal of the sidings in this area. It would be on the start of the 1:88 gradient. The station could be built without the need of a footbridge and associated lifts.

M.7 Summary

M.7.1 In summary:

- **Site A** requires access through the village and past the school, but it has plenty of space for car parking and could possibly be built without the need of a footbridge and associated lifts.
- **Site B** former station site is quite constrained in terms of car parking space and also by the housing area. More space could be created by moving either or both Network Rail and other industrial activity, but at a cost.
- **Site C** has some difficulties, both with railway works and access and no obvious advantages, so is discounted.

Overall

- M.7.2 Site A (to the south of Beattock) and Site B (the former station site) could both be considered as possible station sites, with a clear set of requirements and criteria to inform the decision.

Appendix N Option 6 - Station Usage Surveys

N.1.1 PBA commissioned ProTel Fieldwork to undertake a variety of surveys concerning existing usage of Lockerbie railway stations in early 2018. The data collected will be used to inform demand forecasting for the proposed railway station at Beattock.

N.1.2 This note describes the surveys undertaken and summarises findings.

N.2 Surveys Undertaken

N.2.1 Two types of surveys were undertaken. These were as follows:

- Passenger Counts
 - ProTel survey teams undertook passenger counts from 0700-1400 on Monday 29th and Tuesday 30th January and from 0830-1530 on Saturday 3rd February 2018 at Lockerbie Station.
 - Surveyors counted how many passengers boarded and alighted all trains which visited the station during the survey period.
 - These counts allowed a sample rate to be estimated for the platform surveys.
- Platform Surveys
 - Survey dates and times were as per platform surveys.
 - Surveyors asked departing passengers about their current journey and wider usage of the respective stations. Where it was not possible to survey all passengers during the time available, then passengers were provided with a paper copy of the survey and a postage paid return envelope.

N.3 Passenger Counts

N.3.1 A total of 356 passengers boarded trains and 22 passengers alighted from trains at Lockerbie station over the 21-hour survey period. Table N.1 summarises the flows observed on a day-by-day basis.

Table N.1: Railway Passenger Count Summary

Day	Time Period	No. Departing Passengers	No. Arriving Passengers	Origin/Destination to North
Mon 29 th	0700-1400	105	5	65%
Tues 30 th	0700-1400	122	4	66%
Sat 3 rd	0830-1530	129	13	73%

N.3.2 Figure N.1 to Figure N.3 illustrate the number of passengers boarding / alighting from each service via Lockerbie during the study period.

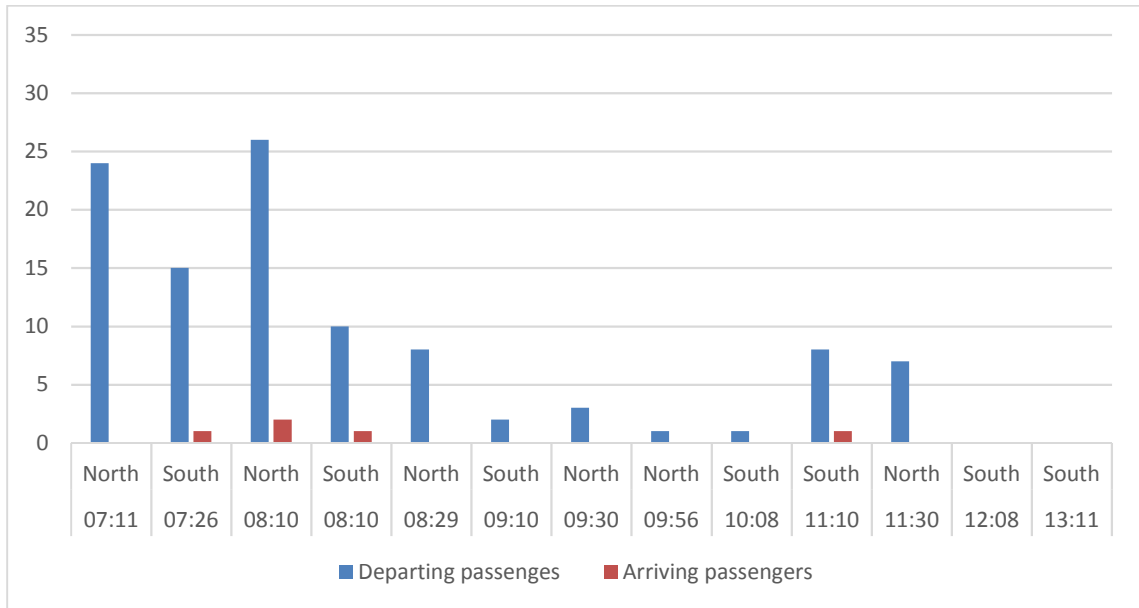


Figure N.1: Lockerbie Station Passenger Count 29/01/18

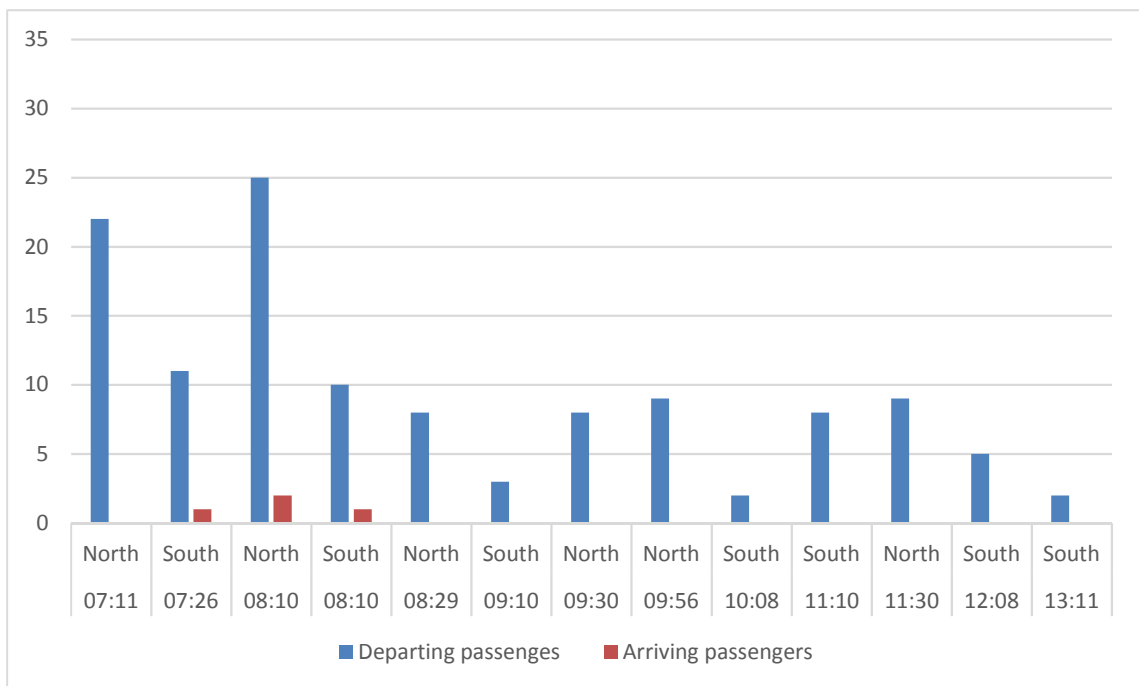


Figure N.2: Lockerbie Station Passenger Count 30/01/18

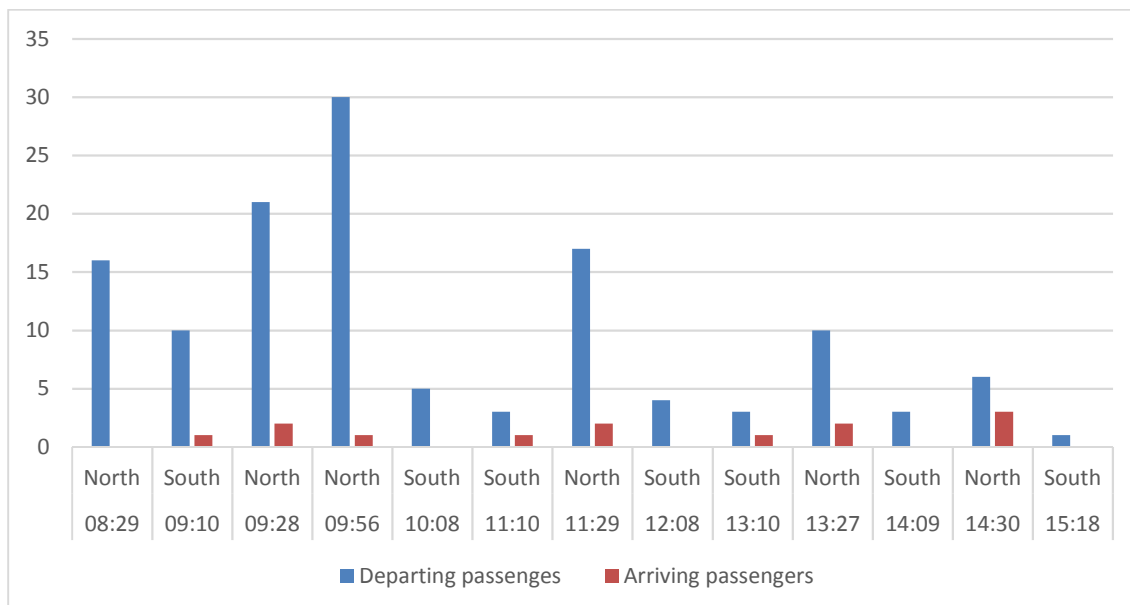


Figure N.3: Lockerbie Station Passenger Count 03/02/18

- N.3.3 Weekend demand is approximately 20% higher than weekday demand at Lockerbie. The difference between weekend and weekday traffic at Lockerbie is substantially smaller than seen at nearby stations. It may be that long distance demand is less affected by day of the week.
- N.3.4 Throughout the week, the majority of trips to and from Lockerbie have origins/destinations to the north (e.g. Edinburgh or Glasgow).

N.4 Platform Survey Findings

- N.4.1 Platform surveys were completed with 159 departing railway passengers at Lockerbie railway station, asking passengers about the rail trip they were making and their wider usage of Lockerbie Station. However, two of the surveys had been completed with multiple errors, requiring them to be discarded, so the true sample size is 157. This represents a sample rate of 44%.

Where are you coming from and how did you access the station?

- N.4.2 Passengers were asked about how they made the journey to Lockerbie station that day, and where they had come from. Being located on the West Coast Main Line, Lockerbie station has a large catchment area, extending from Sanquhar to Kirkcudbright and into northern England.
- N.4.3 It was found that the majority of the people (78%) use car, 14% walk to Lockerbie Station, and lower percentages of 7% and 5% travel by bus and taxi respectively. Figure N.4 illustrates how mode varies with origin location and displays the provided surface origin locations.

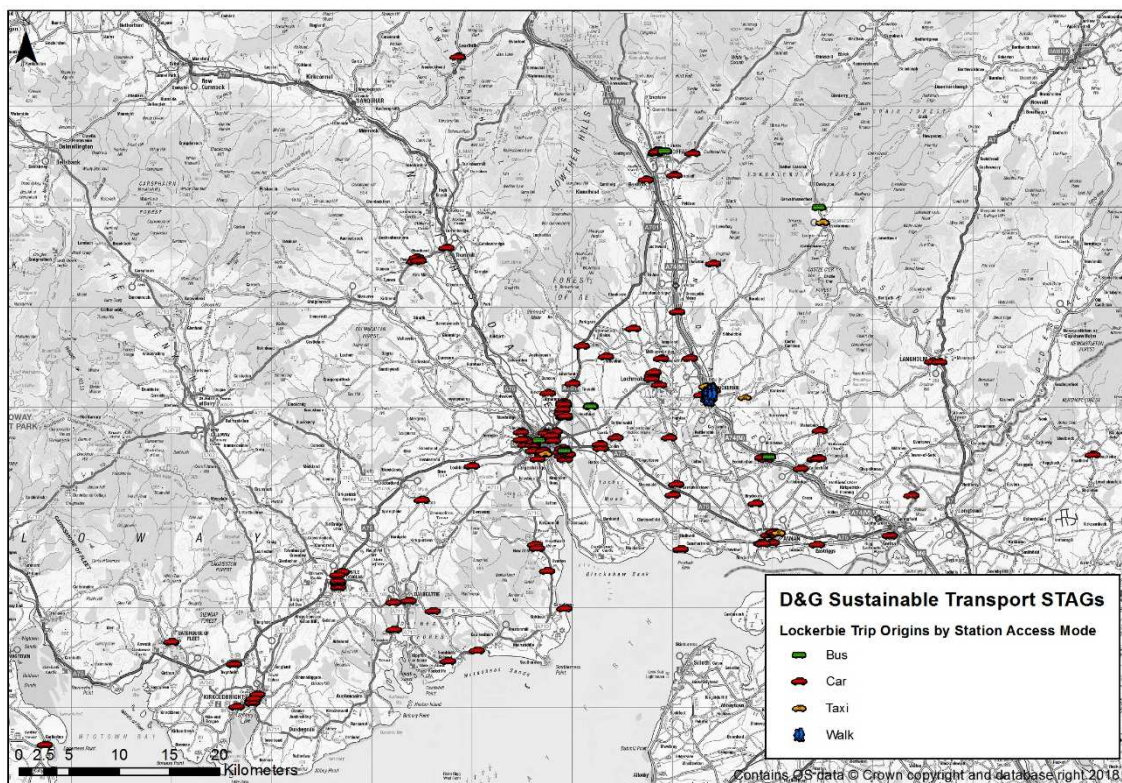


Figure N.4: Lockerbie Station User Origin Locations by Access Mode

N.4.4 Only 24% of respondents were found to have an origin within 10km of Lockerbie Station and 69% within 20km. Lockerbie Station clearly has a very large catchment area.

Where are you going?

N.4.5 Sitting on the West Coast Main Line, Lockerbie Station provides an important connection to long distance rail services running south to Newcastle, Manchester and London and express services north to Edinburgh and Glasgow, which are inaccessible elsewhere in Dumfries and Galloway.

N.4.6 Many travellers were using the train for only part of their journey and so respondents were asked firstly where they would alight from the train they were catching at Lockerbie and then what their ultimate destination would be.

N.4.7 Figure N.5 illustrates where passengers noted that they were alighting the train during the week and at the weekend. Across the week, 74% of respondents were found to be travelling to destinations to the north of Lockerbie, and 26% to the south. Similar patterns were seen on both weekdays and weekends, although the northbound figure varied from 71% during the week to 79% at the weekend. Glasgow Central was the most commonly cited station, followed by Edinburgh Waverley.

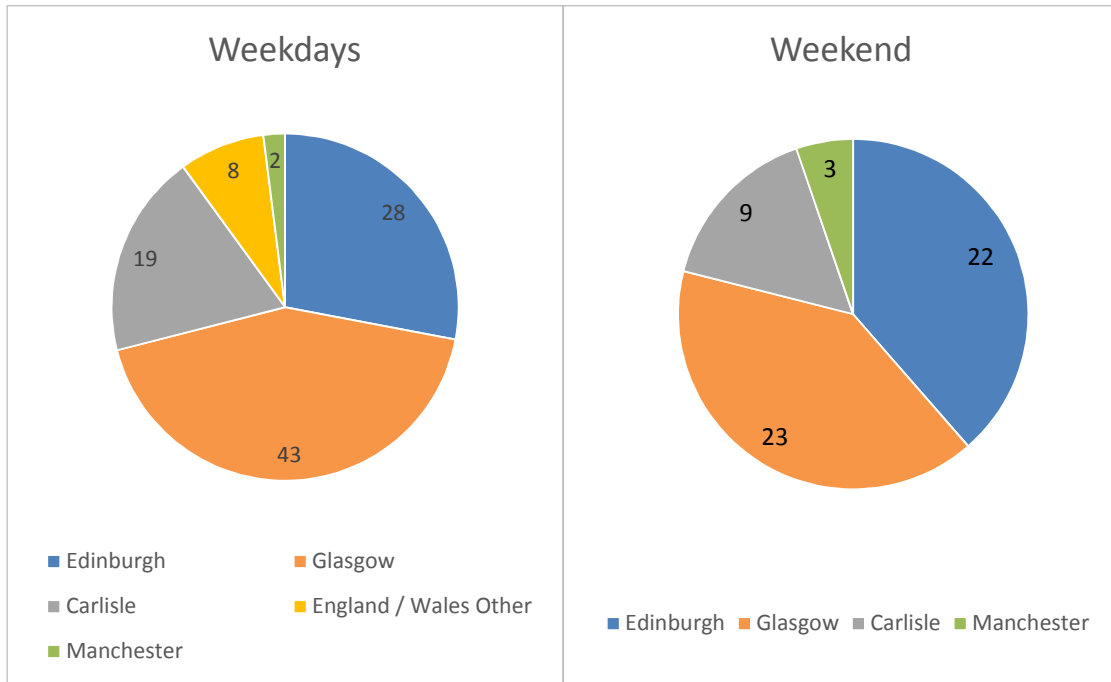


Figure N.5: Breakdown of Destinations where Respondents Alighted from the Train from Lockerbie

N.4.8 In addition to where they would alight the train, passengers were asked to provide details of their final destination. Glasgow was the most frequently cited destination overall, followed by Edinburgh and then Carlisle. Figure N.6 provides a more detailed comparison of respondents' reported final destinations during the week and at the weekend. There appears to be a greater propensity for long distance travel at the weekend.

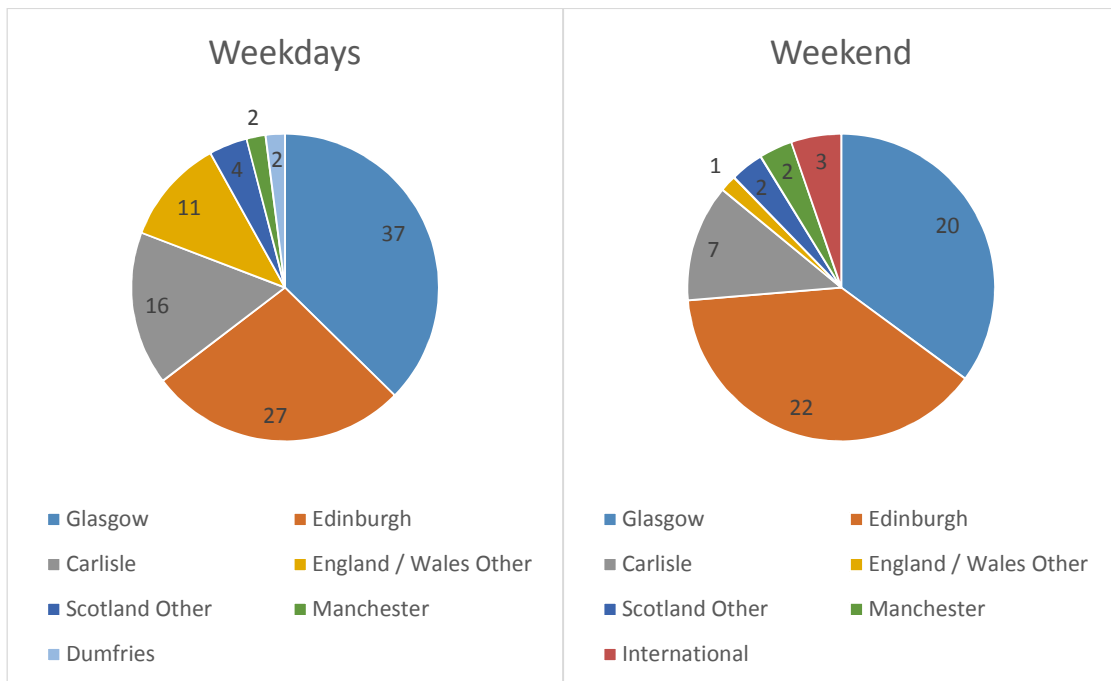


Figure N.6: Final Destination by Time of Week

Why are you travelling?

N.4.9 Unsurprisingly, travel purpose was also found to vary by day of the week, with the proportion of trips for work/education dropping from 66% during the week to just 5% at the weekend. Figure N.7 provides a detailed breakdown of travel purposes, by weekday and weekend.

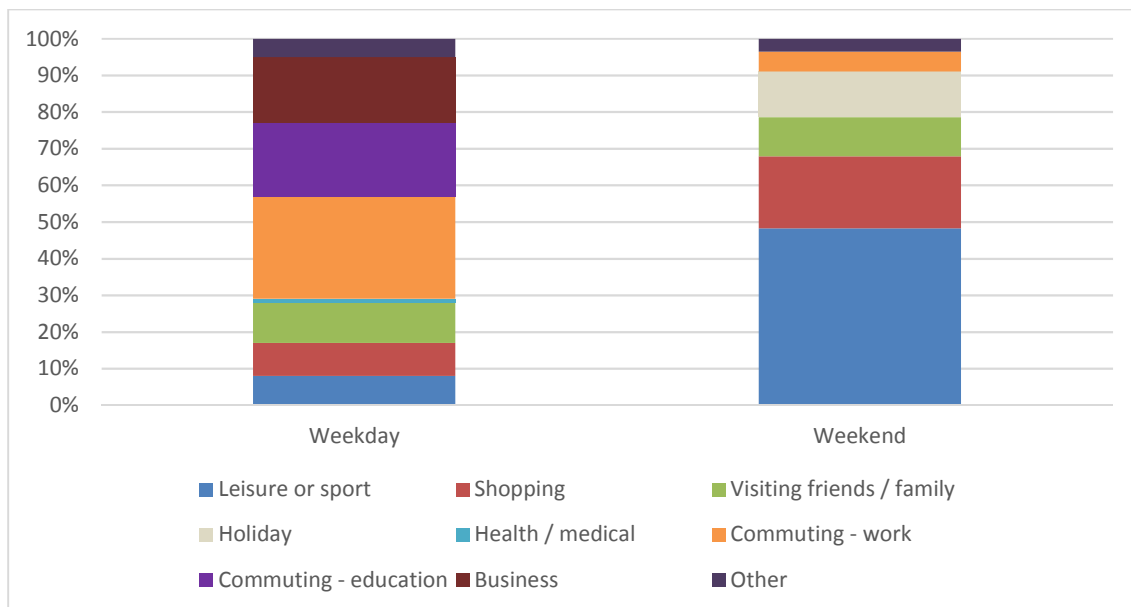


Figure N.7: Travel Purpose by Time of Week

N.4.10 Overall, commuting to work was found to be the most common travel purpose during the week and Leisure or Sport was found to be most common at the weekend.

How frequently do you make this journey?

N.4.11 Travellers were also asked how frequently they made the journey they were embarking upon at the time of the survey (Note: 156 people answered this question). Figure N.8 shows the number of respondents falling into each frequency bracket. It is important to note that this question only gauges the frequency with which respondents make the trip they were embarking upon at the time of survey and does not account for rail travel to other destinations.

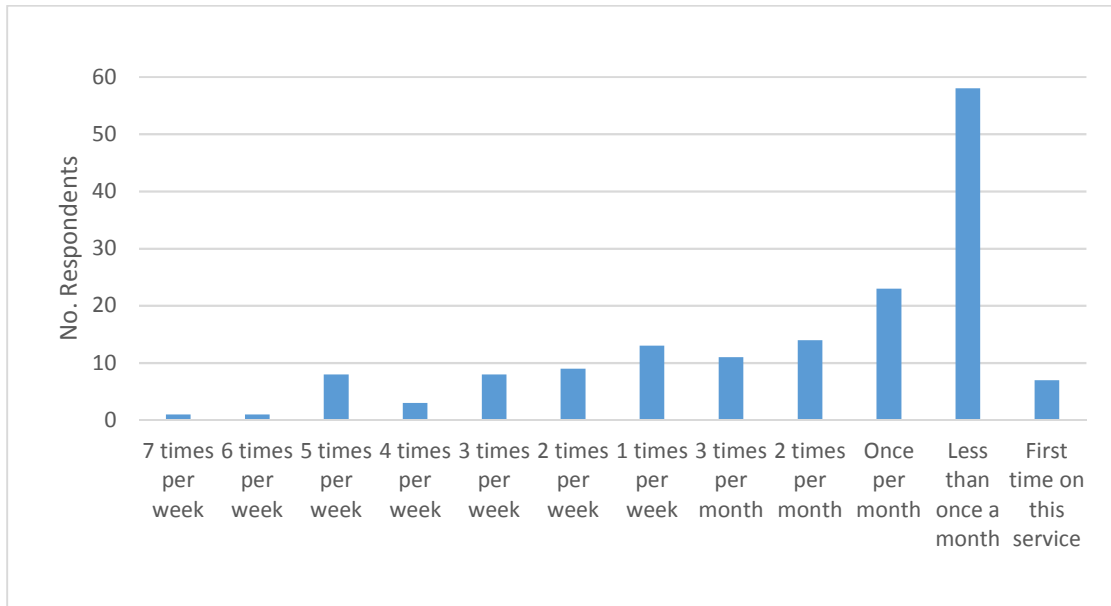


Figure N.8: Frequency of Surveyed Trip

- N.4.12 Multiplying the number of respondents by the indicated frequency, it is estimated that the 156 respondents generate circa 6,800 outbound trips (and 6,800 inbound trips) per year. This relates to circa 87 trips (outbound + inbound) per person per year on average.
- N.4.13 Data from the Office for Rail Regulation (ORR) reports that there were 250,940 entries and exits through Lockerbie railway station over the period 2016-17. If the survey captured 156 passengers making circa 13,600 trips per year, that represents circa 5% of the total annual trips to/from Lockerbie.
- N.4.14 Trip frequency is also heavily influenced by trip purpose. Figure N.9 provides a breakdown by purpose of the number of people travelling at each level of frequency. Results are largely as expected, e.g. highest frequency trips for commuting and leisure trips less frequent.

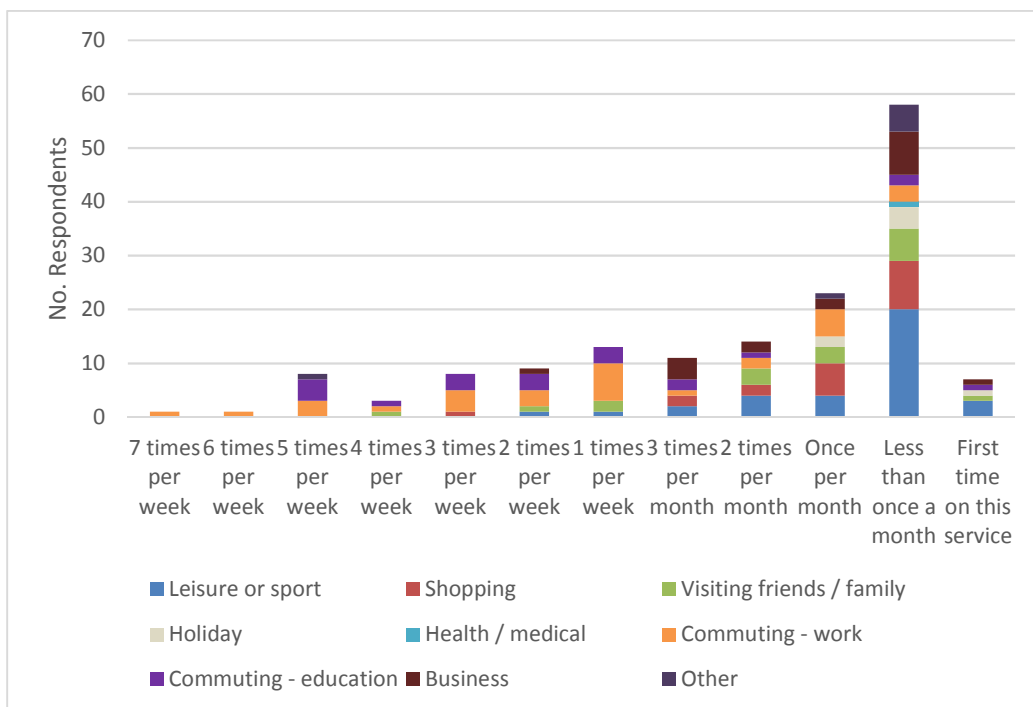


Figure N.9: Trip Frequency by Purpose

Where else do you travel by train?

N.4.15 While statistics above refer to the frequency with which respondents make the journey they were embarking upon that day, passengers were also asked which other locations the travel to by train.

N.4.16 Figure N.10 indicates the proportion of respondents who use the train to travel to each of the listed destinations. This takes account of the rail journey that travellers were making at the time of the survey in addition to wider rail travel. The most commonly cited destinations overall were Edinburgh (67%), Glasgow (58%) and Carlisle (39%).

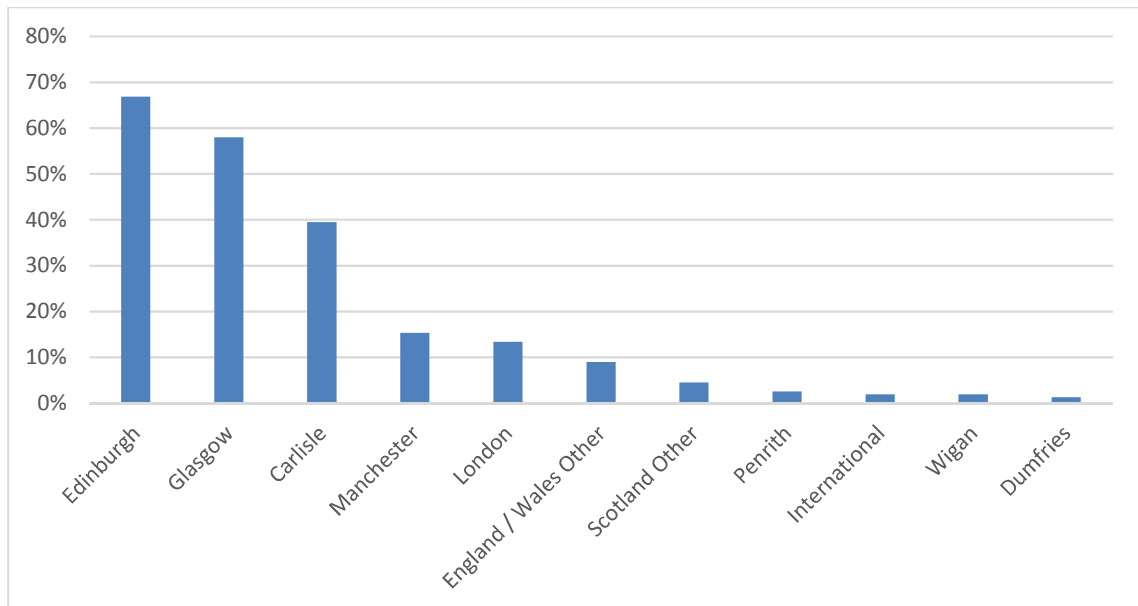


Figure N.10: All Destinations Accessed by Train

Why did you choose to travel by train?

N.4.17 Travellers were also asked about their reasons for using the train. The most common responses included:

- Quicker (72%);
- Convenience (37%);
- More Comfortable (28%);
- Easier to access (12%);
- I can work on the train (11%);
- Cost of parking at destination (11%); and
- Reliable (10%).

How would you have made this journey, if the train was not running?

N.4.18 More than half of the respondents (55%) stated that they would have driven if the train was not running, while 35% would not have travelled and 10% would have taken the bus.

What is your employment status?

N.4.19 Respondents were also asked about their employment status. Figure N.11 provides a detailed breakdown of employment statuses. Overall, 75% were in employment, 10% in higher/further education and the remainder were not working.

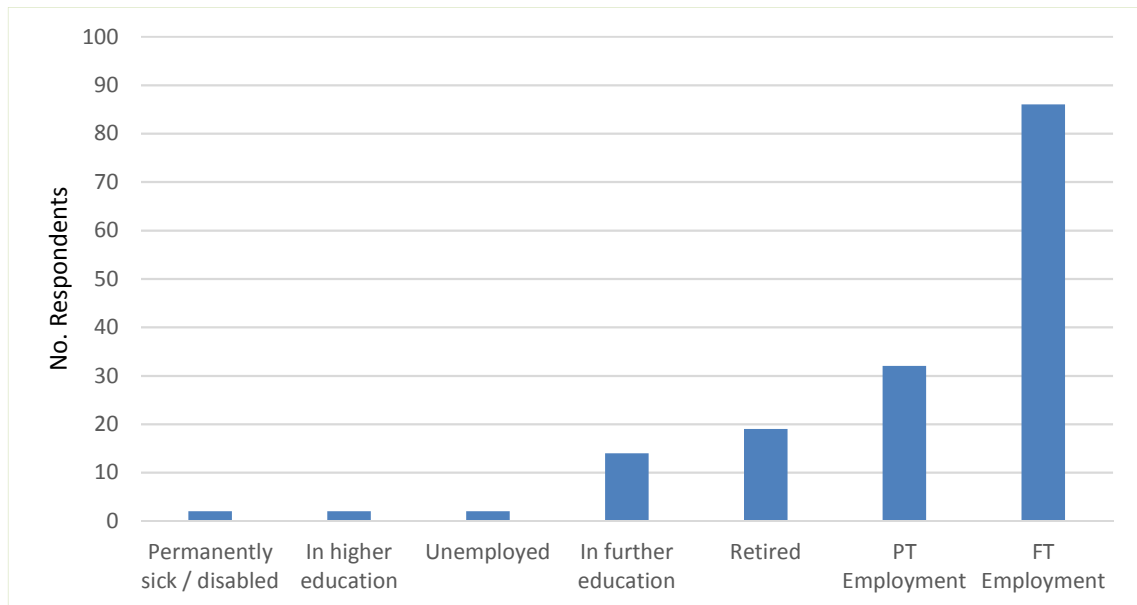


Figure N.11: Respondents' Employment Statuses

How many cars are there in your household?

N.4.20 The 2011 census shows that approximately 75% of households in Lockerbie own one or more cars/vans. However, the platform survey found that approximately 88% of Lockerbie railway station users have access to a car. In this respect, Lockerbie is likely to differ from other nearby stations, as it provides access to long-distance, strategic travel links, which are unavailable elsewhere in Dumfries and Galloway. As such, the catchment for Lockerbie is considerably larger and users are much more likely to depend on the car to make this connection.

Do you hold a National Entitlement Card (bus pass)?

N.4.21 37 of the 157 respondents (24%) explained that they hold a National Entitlement Card.

N.5 Key Findings

N.5.1 This section highlights some of the key findings from the surveys undertaken at Lockerbie railway station.

- Weekend demand is approximately 20% higher than weekday demand at Lockerbie. This shows a more consistent daily profile than many other local stations.
- Throughout the week, 70-80% of trips to/from Lockerbie are made to stations in the North. The most common destinations for travel from Lockerbie were found to Edinburgh, Glasgow and Carlisle.
- Lockerbie station has a very large catchment area compared to other local stations, extending from Sanquhar to Kirkcudbright and into northern England. This illustrates the differing attractiveness of stations providing access to local and long-distance rail services.

- The majority of people (78%) use the car to access Lockerbie Station and 14% walk, while lower percentages of 7% and 5% travel by bus and taxi respectively. The high proportion of car users aligns with the large catchment area.
- During the week 56% of rail trips recorded from Lockerbie were being made work or education purposes. This value drops to 5% at the weekend.
- Almost ¾ of respondents explained that they chose to use the train because it was quicker than the alternative travel options.
- Approximately 85% of respondents were found to be employed or in education.
- Respondents were more likely to have access to a car than the Lockerbie average – 88% of respondents have one or more cars in their household versus the Lockerbie average of 75%.

Appendix O Part 2: Transport Planning Objectives Appraisal

O.1 Transport Planning Objectives

O.1.1 Three transport planning objectives have been set for the study:

- **TPO 1:** Enable an effective day trip by public transport to key education, retail and social opportunities in Glasgow, Edinburgh and Carlisle
- **TPO 2:** Provide public transport connectivity which enables travel to and from the area across the day and across the week
- **TPO 3:** Increase the inbound public transport catchment to support local businesses through increased visitors to the area

O.2 Transport Planning Objective 1: Appraisal

Enable an effective day trip by public transport to key education, retail and social opportunities in Glasgow, Edinburgh and Carlisle

O.2.1 In order to appraise the options, TRACC accessibility software was utilised to consider existing and 'with option' journey times in the morning period (08:00 – 12:00) from Beattock to

- Glasgow;
- Edinburgh; and
- Carlisle.

O.2.2 The reverse trip from the four strategic locations to Beattock in the afternoon / evening period (16:00 – 20:00) was also considered.

O.2.3 A similar assessment was also undertaken considering Lockerbie, in order to provide a similar comparator location.

O.2.4 The time periods considered sought to identify whether the transport option would enable an effective day trip to the strategic locations such that a suitable amount of time could be spent in undertaking activities in the visited location.

Option 1a/b

O.2.5 The results of the assessment for Option 1a/b are shown in Table O.1. Note that TRACC provides the fastest journey time available by public transport between the origins and destinations in the time period considered.

Table O.1: Appraisal against TPO1 – Option 1a/b

			Existing Situation			With Option			Difference		
			Beattock	Moffat	Lockerbie	Beattock	Moffat	Lockerbie	Beattock	Moffat	Lockerbie
Betw een 08:00 - 12:00	To	Edinburgh	128	137	82	109	114	82	-19	-23	0
		Glasgow	112	110	77	116	116	77	4	6	0
		Carlisle	108	117	32	74	81	32	-34	-36	0
Betw een 16:00 - 20:00	From	Edinburgh	121	131	75	103	113	75	-18	-18	0
		Glasgow	110	109	66	106	106	66	-4	-3	0
		Carlisle	99	105	30	58	69	30	-41	-36	0

O.2.6 As the option provides greater accessibility to Lockerbie station, it would be expected that the option would provide a reduction in travel time between Beattock and Edinburgh and Glasgow, given the access at Lockerbie to the fast trains on the WCML but this is dependent on which trains the timetable has been optimised to meet.

O.2.7 The results highlight:

- A reduced journey time to Edinburgh in both the morning and evening periods of up to 23 minutes from Moffat in the morning period;
- Minimal changes in the journey times to Glasgow, with a small decrease in the evening periods but a slight increase in the morning period, due to the bus timetable optimisation to meet as many trains as possible; and
- Large reductions in the journey time to Carlisle of up to around 30 - 40 minutes.

O.2.8 Consideration of the comparable journey times between Lockerbie and Edinburgh and Glasgow shows that in the existing, the travel time from Beattock and Moffat to the two major cities is between around 30 – 60 minutes slower than from Lockerbie in both the morning and evening periods. This is despite being Moffat and Beattock being geographically closer to both Edinburgh and Glasgow. With the addition of the option, travel from Beattock and Moffat is only around 30 – 40 minutes slower than from Lockerbie.

O.2.9 The reduced journey time between Beattock and Moffat, and Edinburgh and Glasgow, is likely to enable more time in the strategic locations to undertake activities, enabling a more effective day trip to these locations, and therefore the option provides a positive benefit against this TPO.

Option 3

O.2.10 The results of the assessment for Option 3 are shown in Table O.2. Note that TRACC provides the fastest journey time available by public transport between the origins and destinations in the time period considered.

Table O.2: Appraisal against TPO1 – Option 3

			Existing Situation			With Option			Difference		
			Beattock	Moffat	Lockerbie	Beattock	Moffat	Lockerbie	Beattock	Moffat	Lockerbie
Betw een 08:00 - 12:00	To	Edinburgh	128	137	82	128	137	82	0	0	0
		Glasgow	112	110	77	112	110	77	0	0	0
		Carlisle	108	117	32	108	117	32	0	0	0
Betw een 16:00 - 20:00	From	Edinburgh	121	131	75	121	131	75	0	0	0
		Glasgow	110	109	66	110	109	66	0	0	0
		Carlisle	99	105	30	99	105	30	0	0	0

O.2.11 As the option provides increased opportunities to access Edinburgh, it would not necessarily provide reduced journey times, but may provide an increased ability to undertake a day trip by offering far greater flexibility in the timings of journeys.

O.2.12 As expected, given there are no faster services provided for the option, the results do not show any difference between the existing situation and the option.

O.2.13 Given the additional flexibility, the option therefore provides a positive benefit against this TPO.

Option 6

O.2.14 The results of the assessment for Option 6 are shown in Table O.3. Note again that TRACC provides the fastest journey time available by public transport between the origins and destinations in the time period considered.

Table O.3: Appraisal against TPO1 – Option 6

			Existing Situation			With Option			Difference		
			Beattock	Moffat	Lockerbie	Beattock	Moffat	Lockerbie	Beattock	Moffat	Lockerbie
Between 08:00 - 12:00	To	Edinburgh	128	137	82	125	137	82	-3	0	0
		Glasgow	112	110	77	54	73	78	-58	-37	1
		Carlisle	108	117	32	108	117	32	0	0	0
Between 16:00 - 20:00	From	Edinburgh	121	131	75	53	131	75	-68	0	0
		Glasgow	110	109	66	38	109	66	-73	0	0
		Carlisle	99	105	30	40	105	30	-58	0	0

O.2.15 It can be seen from the results that:

- It is currently around 45 minutes quicker to access **Edinburgh** from Lockerbie compared to from Beattock. While there is no change in the morning period (due to the stopping pattern not providing any improved accessibility between 08:00 and 12:00), in the evening it becomes around 25 minutes *quicker* from Beattock to Edinburgh than from Lockerbie.
- It is currently 35 minutes quicker in the morning period, and around 45 minutes quicker in the evening period, to access **Glasgow** from Lockerbie compared to from Beattock. With the option in place it becomes 30 minutes *quicker* in the morning period and nearly 20 minutes *quicker* in the evening period from Beattock.
- It is currently around 70-75 minutes quicker to access **Carlisle** from Lockerbie compared to from Beattock in the morning and evening. With the option in place, it becomes just 10 minutes slower from Beattock. **This difference especially opens up opportunities for a more effective day trip to Carlisle.** No change is noted in the results for the morning period due to the stopping pattern not providing any improved connectivity between 08:00 and 12:00. However, a service at 07:28 from Beattock, would arrive into Edinburgh at just after 08:30 offering a much improved morning journey times of under 70 minutes (compared to the existing situation of over 2 hours).

O.2.16 The option therefore provides a major positive benefit against this TPO, especially for enabling more effective day trips to the three cities through much improved and faster journey times.

O.3 Transport Planning Objective 2: Appraisal

Provide public transport connectivity which enables travel to and from the area across the day and across the week

O.3.1 This TPO has been assessed through consideration of:

- The earliest available northbound and southbound connections from Beattock in both the existing and 'with option' situations; and
- The latest available northbound and southbound connections to Beattock in both the existing and 'with option' situations.

O.3.2 The results of the appraisal are set out in Table R.4. The analysis shows:

- Option 1a/b provides 7 new connections to Lockerbie from Beattock on a weekday/Saturday with the service increasing operating hours across the day by over 7 hours with the service offering connections from 2 hours earlier in the morning and 5 hours later into the evening. This enables access back from Lockerbie much later in the day and connecting with late rail arrivals;
- While Option 3 only increases the operating day for trips to Edinburgh by 90 minutes on a weekday, there are an additional 5 connections on a weekday/Saturday and 4 on a Sunday, providing far greater flexibility in time of travel;
- Option 6:
 - Provides an additional 4 connections to Glasgow, 2 to Edinburgh and 6 to Lockerbie on a weekday /Saturday (note that the Sunday timetable was not developed for the appraisal).
 - Provides an extended operating day for connecting with Lockerbie, with an additional 4 hours 30 minutes of coverage, providing connectivity much later into the evening. Note that this also provides the same access back from Carlisle as all Lockerbie rail services also stop at Carlisle.
 - Does not extend the operating day for connections to Glasgow or Edinburgh but it is important to note that:
 - For travel to Glasgow, it would be possible to leave Beattock / Moffat at around 07:30 by rail and arrive into Glasgow at the same time as a bus which left Beattock / Moffat at 06:45. While the rail service is not providing access into Glasgow any earlier in the day, the start time of the journey is around 45 minutes later than the bus, reducing the need for the very early start from Beattock / Moffat.
 - It is also important to note that Option 6 provides direct connectivity to Carlisle where there is currently none, with the timetable offering the earliest connection to Carlisle at around 07:50 (arriving Carlisle at 08:30), and the latest connection back to Beattock from Carlisle at 22:16. Also note a connection at 17:15 back from Carlisle. The timetable would therefore be very effective for commuters.

Table R.4: Appraisal against TPO2 – All options

		Scenario	Earliest Departure From	Latest Arrival Back	Operating Hours	Change in Operating Hours from Existing	Number of connections	Change in number of connections from existing
Northbound (to/from Glasgow)	Monday to Saturday	Existing	06:45	00:50	18:05	-	13	-
		1a/b	06:45	00:50	18:05	00:00	13	0
		3	06:45	00:50	18:05	00:00	13	0
		6	06:45	00:50	18:05	00:00	17	4
	Sunday	Existing	07:20	00:50	17:30	-	8	-
		1a/b	07:20	00:50	17:30	00:00	8	0
		3	07:20	00:50	17:30	00:00	8	0
		6	*	*	N/A	N/A	*	N/A
Northbound (to/from Edinburgh)	Monday to Saturday	Existing	06:01	23:00	16:59	-	3	-
		1a/b	06:01	23:00	16:59	00:00	3	0
		3	06:01	00:30	18:29	01:30	8	5
		6	06:01	23:00	16:59	00:00	5	2
	Sunday	Existing	10:30	23:06	12:36	-	1	-
		1a/b	10:30	23:06	12:36	00:00	1	0
		3	09:45	23:11	13:26	00:50	5	4
		6	*	*	N/A	N/A	*	N/A
Northbound (to/from Lockerbie)	Monday to Saturday	Existing	07:20	18:05	10:45	-	10	-
		1a/b	05:20	23:13	17:53	07:08	17	7
		3	07:20	18:05	10:45	00:00	10	0
		6	07:20	22:34	15:14	04:29	16	6
	Sunday	Existing	11:25	18:10	06:45	-	4	-
		1a/b	10:25	23:02	12:37	05:52	4	0
		3	11:25	18:10	06:45	00:00	4	0
		6	*	*	N/A	N/A	*	N/A

* Sunday timetable not considered in appraisal.

O.4 Transport Planning Objective 3: Appraisal

Increase the inbound public transport catchment to support education, tourism and local businesses

O.4.1 In order to appraise the options, TRACC accessibility software was utilised to consider the number of people who can reach Moffat and Beattock within 1 hour and 2 hours, both in the existing situation and with the options in place in the morning and evenings periods. This provides an indication as to the accessibility of Moffat and Beattock for those coming into the area.

Option 1a/b

O.4.2 The analysis for Option 1a/b is presented in Table R.5.

Table R.5: Appraisal against TPO3 – Option 1a/b

		Within	Existing Situation	With Option	Difference	% Difference
Between 08:00 - 12:00	Moffat	1 hour	38,927	38,927	-	0%
		2 hours	583,903	605,837	21,934	4%
	Beattock	1 hour	53,872	53,872	-	0%
		2 hours	621,620	642,544	20,924	4%
	Lockerbie	1 hour	178,888	178,888	-	0%
		2 hours	2,328,722	2,328,722	-	0%

O.4.3 The table shows an increase in people able to access Moffat and Beattock with the option in place, with an increase of 4% in the number of people able to access the study area in under 2 hours.

Option 3

O.4.4 The analysis for Option 3 is presented in Table R.6.

Table R.6: Appraisal against TPO3 – Option 3

		Within	Existing Situation	With Option	Difference	% Difference
Between 08:00 - 12:00	Moffat	1 hour	38,927	44,883	5,956	13%
		2 hours	583,903	592,084	2,225	0%
	Beattock	1 hour	53,872	56,822	2,950	5%
		2 hours	621,620	627,216	2,646	0%
	Lockerbie	1 hour	178,888	178,888	-	0%
		2 hours	2,328,722	2,328,722	-	0%

O.4.5 The table shows an increase in people able to access Moffat and Beattock with the option in place, with an increase of 13% in the number of people able to access Moffat, and an increase of 5% in the number of people able to access Beattock in under 1 hour.

Option 6

O.4.6 The analysis for Option 6 is presented in Table R.7.

Table R.7: Appraisal against TPO3 – Option 6

		Within	Existing Situation	With Option	Difference	% Difference
Between 08:00 - 12:00	Moffat	1 hour	38,927	38,927	-	0%
		2 hours	583,903	678,183	94,280	15%
	Beattock	1 hour	53,872	235,648	181,776	77%
		2 hours	621,620	2,567,852	1,764,456	76%
	Lockerbie	1 hour	178,888	178,888	-	0%
		2 hours	2,328,722	2,328,722	-	0%

O.4.7 The table shows the very significant increase in the number of people able to access the study area with over a 75% increase for those able to access Beattock in both under an hour and under two hours. There is additionally an increase of 15% in the number of people able to access Moffat in under 2 hours. The lower increase for Moffat compared to Beattock, reflects the fact that onwards connections are required from Beattock station to reach Moffat. The increased accessibility of the area has the potential to substantially increase the accessibility of the area to support education, tourism and local businesses.

Appendix P Part 2: Environmental Appraisal

P.1 Methodology

- P.1.1 In order to provide a consistent and 'nested' approach to environmental appraisal in the local authority area, this appraisal has also utilised the framework developed for the Strategic Environmental Assessment of Dumfries and Galloway Council Local Development Plan 2 (LDP2)¹³, published in 2017. This provides an additional robust and means tested framework that has been developed specifically for the local area. This assessment process also forms an appropriate starting point should any of the options require an Environmental Impact Assessment (EIA) or Strategic Environmental Assessment (SEA) at a later stage.
- P.1.2 To assist with the LDP2 SEA assessment process, objectives were identified for each SEA topic to be considered when seeking to reach a conclusion on the potential impact of each strand of the LDP2 strategy. These objectives were identified through an analysis of the environmental problems, baseline data and other relevant plans, programmes and environmental protection objectives, and finalised through consultation with the relevant authorities.
- P.1.3 This analysis considers the potential impact of each transport option under the STAG criteria and against the LDP2 objectives. The full assessment framework is presented in Table P.1

Table P.1: STAG Environmental Appraisal Criteria and LDP objectives

STAG Criteria	LDP Topic	Objective
Noise and vibration	N/A	<ul style="list-style-type: none"> N/A
Global air quality – carbon dioxide (CO ₂)	Climatic Factors	<ul style="list-style-type: none"> To contribute to the reduction of greenhouse gases and reduce energy consumption To promote sustainable energy technologies and energy efficiency To minimise / reduce the need for travel by car
Local air quality – particulates (PM ₁₀) and nitrogen dioxide (NO ₂)	Air Quality	<ul style="list-style-type: none"> To maintain and, where possible, improve air quality
Water quality; drainage and flood defence	Water	<ul style="list-style-type: none"> To manage and reduce flood risk and to support opportunities to do so through sustainable flood management (SuDS) To protect and enhance the state of the water environment

¹³ Dumfries and Galloway Council Local Development Plan 2. Environment Report. January 2017

STAG Criteria	LDP Topic	Objective
Geology	N/A	<ul style="list-style-type: none"> N/A
Biodiversity and habitats	Biodiversity, Flora and Fauna	<ul style="list-style-type: none"> To conserve and enhance biodiversity
Landscape	Landscape	<ul style="list-style-type: none"> To protect and enhance the character, distinctiveness and diversity of the region's landscape. To protect and enhance the landscape setting of settlements plus the landscape and scenic qualities of designated landscapes, areas of wild land, and important views
Visual amenity	N/A	<ul style="list-style-type: none"> N/A
Agriculture and soils	Soil	<ul style="list-style-type: none"> To safeguard the soil quality, geodiversity and improve contaminated land To reduce negative effects on peat and carbon rich soils To reduce and minimise soil and coastal erosion
Cultural Heritage	Cultural Heritage	<ul style="list-style-type: none"> To protect and enhance the region's rich built and historic environment including its setting
Physical Fitness	Population & Human Health	<ul style="list-style-type: none"> To improve the quality of life, human health, well-being and inclusion for all To increase the opportunities for access to, and enjoyment of, greenspaces and the wider landscape To encourage development within areas which are easily accessible by public transport as well as having

STAG Criteria	LDP Topic	Objective
		good pedestrian and cycle linkages
N/A	Material Assets	<ul style="list-style-type: none"> ■ To manage, maintain and promote the sustainable use of natural resources ■ To reduce waste production and adopt sustainable waste management practices

P.1.4 The LDP2 SEA Environment Report includes a description of the relevant aspects of the current nature of the environment in Dumfries and Galloway and the environmental characteristics of areas likely to be significantly affected by future development. These are outlined in Table P.2 below.

Table P.2: Key Environmental Issues as noted in Dumfries and Galloway LDP2 document

Topic	Key Environmental Issues/Problems
Noise and vibration	<ul style="list-style-type: none"> ■ N/A
Climatic Factors	<ul style="list-style-type: none"> ■ Anticipated that summers will be warmer and drier, autumn and winter will be milder and wetter, with an increase in intense rainfall, and rising sea levels. ■ There are a significant number of renewable energy schemes installed throughout the region using a variety of technologies with wind and hydro being the main elements. ■ Car ownership in the region is relatively high recognising the relatively sparse population and limited public transport options. ■ Rail usage has increased in the region however overall the region is poorly served by rail routes. ■ Observed climate changes have had impacts on many aspects of our environment, the resilience of our businesses, the health and well-being of our people and our infrastructure and these impacts will continue and even intensify in the projected future climate.
Air	<ul style="list-style-type: none"> ■ Air quality within the region is generally good. ■ There are no Air Quality Management Areas within the region.
Water	<ul style="list-style-type: none"> ■ There are a number of watercourses that are subject to potential flood risk. ■ The number of flood incidents has fluctuated over the years and appears to be directly related to rainfall. ■ The condition of water bodies has generally improved over the long term but not in the short term. ■ The quality of groundwater in the region is generally good but there appears to be a declining trend. ■ The quality of the public water supply is generally high although there is a relatively high number of private water supplies.

Topic	Key Environmental Issues/Problems
	<ul style="list-style-type: none"> ■ Climate change may cause increased competition for water, as well as increased flood risks.
Geology	<ul style="list-style-type: none"> ■ N/A
Biodiversity, Flora and Fauna	<ul style="list-style-type: none"> ■ There are a number of international and national designations across the region. ■ Of the 29 international designations, 10 have some element 13 that is in an unfavourable and declining state. ■ Biodiversity generally is in decline but the rate of decline appears to be slowing. ■ Invasive non-native species continue to spread. ■ Approximately a third of the region is covered in woodland and forestry ■ Climate change may rise in significance in the future, adding to existing pressures.
Landscape	<ul style="list-style-type: none"> ■ The region has a rich and diverse landscape and includes areas designated for their landscape and scenic qualities at both the national and local levels. ■ SNH have identified two areas of wildland in the region. ■ TPO records in the region are limited and require updating. ■ The loss of larch and ash trees to <i>Phytophthora ramorum</i> and ash die-back is likely to have a significant impact on region's landscape. ■ The changing climate is already altering our unique Scottish landscapes.
Visual Amenity	<ul style="list-style-type: none"> ■ N/A
Soil	<ul style="list-style-type: none"> ■ Only a small proportion of land is considered to be prime agricultural land. ■ The region contains large areas of peatland. ■ There are a number of sites with potential contaminated land issues that may require mitigation. ■ There are issues of soil erosion particularly through flood events and in coastal areas.
Cultural Heritage	<ul style="list-style-type: none"> ■ The region contains a range of diverse historic assets there have been few changes to the number of designated historic assets. ■ A significant number of historic assets are under-used or in poor condition. ■ Within the region, there are potential restoration schemes for 15 of the buildings on the Buildings at Risk Register for Scotland. ■ There are a relatively high number of designated archaeological sites throughout the region.
Population and Human Health	<ul style="list-style-type: none"> ■ Declining and older population with high life expectancy rates. ■ The number of households is increasing although household size is predicted to decrease. ■ Over a quarter of the region's population live in Dumfries but overall, the region has a relatively low population density of 23 persons per km². ■ Overall, there are low levels of household income with a poorly performing labour market.

Topic	Key Environmental Issues/Problems
	<ul style="list-style-type: none"><li>■ The region is diverse containing some of the most and least deprived areas of Scotland.<li>■ There is high reliance on car ownership in the rural parts of the region although 20% of households do not have access to private transport.<li>■ There is a wealth of recreational opportunities within the region.

P.1.5 All options taken forward to STAG Part 2 have been assessed in detail to identify the likely significant effects on the environmental objectives. The assessment of each option was undertaken on a pre-mitigation basis i.e. assuming full implementation of the option as stated and without the provision of additional policy safeguards or mitigation measures.

P.1.6 The assessment outcomes are shown for each option below.

Table P.3: Option 1a/b – Environmental Appraisal – Table 1

Environmental Aspect	Baseline Key Characteristics	Commentary	Score
Noise and vibration	<ul style="list-style-type: none"> • Beattock village is situated on a minor road off the A701, only providing access to the village itself, with the A701 essentially providing a 'Beattock bypass'. As such traffic volumes and associated noise within the village is low. • The West Coast Main Line routes through the village on which high speed inter-city trains operate, with the associated noise and vibration impacts. 	<ul style="list-style-type: none"> • The option includes the provision of a new bus service however this is unlikely to produce any significant additional noise and will not be operated on any new routes not already utilised by traffic. • The route will predominantly be through the rural countryside and as such there are limited noise receptors that would be affected. 	0
Global air quality – carbon dioxide (CO2)	<ul style="list-style-type: none"> • In 2015, the anticipated total CO2 emissions for Dumfries & Galloway was 715 kilotonnes (kt), 554 kt (77%) of which resulted from road transport 	<ul style="list-style-type: none"> • Providing this new public transport service would directly help to encourage increased bus patronage in the area. This would support sustainable modal shifts and could reduce car dependency, especially for single occupancy journeys. This would help reduce car traffic and associated fossil fuel consumption and greenhouse gas emissions, resulting in a positive impact on Climatic Factors. 	1
Local air quality – particulates (PM10) and nitrogen dioxide (NO2)	<ul style="list-style-type: none"> • There are no Air Quality Management Areas (AQMA) designated in Dumfries & Galloway. • Car ownership in Dumfries & Galloway is increasing, exacerbating pressure on the network and contributing to poor public health through poor air quality, noise and inactivity. 	<ul style="list-style-type: none"> • Providing this public transport route would directly help to encourage increased bus patronage in the area. This would support sustainable modal shifts and could reduce car dependency, especially for single occupancy journeys. This would help reduce car traffic and associated local air pollution, resulting in a positive impact on Air Quality. 	1
Water quality; drainage and flood defence	<ul style="list-style-type: none"> • The principle watercourses in the area are Garpole Water, Evan Water, Moffat Water and River Annan. 	<ul style="list-style-type: none"> • This option would utilise existing roads and infrastructure and would not require acquisition of new land or construction of new facilities. • There is therefore no clear relationship between this option and Water. 	0

Table P.4: Option 1a/b – Environmental Appraisal – Table 2

Environmental Aspect	Baseline Key Characteristics	Commentary	Score
Geology	<ul style="list-style-type: none"> There are no land based SSSI or other designations surrounding the proposed station site. 	<ul style="list-style-type: none"> This option would utilise existing roads and infrastructure and would not require acquisition of new land or construction of new facilities. There is therefore no clear relationship between this option and Geology. 	0
Biodiversity and habitats	<ul style="list-style-type: none"> SSSIs in the surrounding area, include Loch Wood, Shiel Dod. There are areas of Native Woodland surrounding Beattock and the proposed station sites. 	<ul style="list-style-type: none"> This option would utilise existing roads and infrastructure and would not require acquisition of new land or construction of new facilities. There is therefore no clear relationship between this option and Biodiversity. 	0
Landscape	<ul style="list-style-type: none"> The study area is characterised largely rural agricultural land with foothills. There are no Garden and Designed Landscape (GDL) areas or Country Parks located within the study area. 	<ul style="list-style-type: none"> This option would utilise existing roads and infrastructure and would not require acquisition of new land or construction of new facilities. There is therefore no clear relationship between this option and Landscape. 	0
Visual amenity		<ul style="list-style-type: none"> This option would utilise existing roads and infrastructure and would not require acquisition of new land or construction of new facilities. There is therefore no clear relationship between this option and Visual Amenity. 	0
Agriculture and soils	<ul style="list-style-type: none"> There are no land based SSSI or other designations surrounding the proposed station site. 	<ul style="list-style-type: none"> This option would utilise existing roads and infrastructure and would not require acquisition of new land or construction of new facilities. 	0

Table P.5: Option 1a/b – Environmental Appraisal – Table 3

Environmental Aspect	Baseline Key Characteristics	Commentary	Score
Cultural Heritage	<ul style="list-style-type: none"> The towns of Lockerbie, Beattock and Moffat contain a number of listed buildings (Category A to C) There are a number of scheduled monuments in the study area, including Torwood Roman camp. 	<ul style="list-style-type: none"> This option would utilise existing roads and infrastructure and would not require acquisition of new land or construction of new facilities. There is therefore no clear relationship between this option and Cultural Heritage. 	0
Physical Fitness	<ul style="list-style-type: none"> The population of Dumfries & Galloway at 2011 Census was 151,324. 21.8% of the total population is people aged 65 years and over. Life expectancy in Dumfries & Galloway is much in line with the Scotland average with life expectancy at birth being 78.1 for males and 81.3 for females. 	<ul style="list-style-type: none"> Improvements to bus services and integration with rail would reduce journey times for all demographic groups in the areas, and by improving access to essential facilities and services promote social inclusion for those without a car. As such, positive impacts are predicted. This option provide would support increased bus patronage in the area which would improve accessibility to recreational activities and healthcare facilities, especially for those without a car. A modal shift towards public transport would also reduce air pollution and noise in urban areas that is usually associated with vehicular traffic. This option would therefore have a positive effect on health. 	1

Table P.6: Option 3 – Environmental Appraisal – Table 1

Environmental Aspect	Baseline Key Characteristics	Commentary	Score
Noise and vibration	<ul style="list-style-type: none"> • Beattock village is situated on a minor road off the A701, only providing access to the village itself, with the A701 essentially providing a 'Beattock bypass'. As such traffic volumes and associated noise within the village is low. • The West Coast Main Line routes through the village on which high speed inter-city trains operate, with the associated noise and vibration impacts. 	<ul style="list-style-type: none"> • The option includes the provision of a new bus service however this is unlikely to produce any significant additional noise and will not be operated on any new routes not already utilised by traffic. • The route will predominantly be through the rural countryside and as such there are limited noise receptors that would be affected. 	0
Global air quality – carbon dioxide (CO2)	<ul style="list-style-type: none"> • In 2015, the anticipated total CO2 emissions for Dumfries & Galloway was 715 kilotonnes (kt), 554 kt (77%) of which resulted from road transport 	<ul style="list-style-type: none"> • Providing this new public transport service would directly help to encourage increased bus patronage in the area. This would support sustainable modal shifts and could reduce car dependency, especially for single occupancy journeys. This would help reduce car traffic and associated fossil fuel consumption and greenhouse gas emissions, resulting in a positive impact on Climatic Factors. 	1
Local air quality – particulates (PM10) and nitrogen dioxide (NO2)	<ul style="list-style-type: none"> • There are no Air Quality Management Areas (AQMA) designated in Dumfries & Galloway. • Car ownership in Dumfries & Galloway is increasing, exacerbating pressure on the network and contributing to poor public health through poor air quality, noise and inactivity. 	<ul style="list-style-type: none"> • Providing this public transport route would directly help to encourage increased bus patronage in the area. This would support sustainable modal shifts and could reduce car dependency, especially for single occupancy journeys. This would help reduce car traffic and associated local air pollution, resulting in a positive impact on Air Quality. 	1
Water quality; drainage and flood defence	<ul style="list-style-type: none"> • The principle watercourses in the area are Garpole Water, Evan Water, Moffat Water and River Annan. 	<ul style="list-style-type: none"> • This option would utilise existing roads and infrastructure and would not require acquisition of new land or construction of new facilities. • There is therefore no clear relationship between this option and Water. 	0

Table P.7: Option 3 – Environmental Appraisal – Table 2

Environmental Aspect	Baseline Key Characteristics	Commentary	Score
Geology	<ul style="list-style-type: none"> There are no land based SSSI or other designations surrounding the proposed station site. 	<ul style="list-style-type: none"> This option would utilise existing roads and infrastructure and would not require acquisition of new land or construction of new facilities. There is therefore no clear relationship between this option and Geology. 	0
Biodiversity and habitats	<ul style="list-style-type: none"> SSSIs in the surrounding area, include Loch Wood, Shiel Dod. There are areas of Native Woodland surrounding Beattock and the proposed station sites. 	<ul style="list-style-type: none"> This option would utilise existing roads and infrastructure and would not require acquisition of new land or construction of new facilities. There is therefore no clear relationship between this option and Biodiversity. 	0
Landscape	<ul style="list-style-type: none"> The study area is characterised largely rural agricultural land with foothills. There are no Garden and Designed Landscape (GDL) areas or Country Parks located within the study area. 	<ul style="list-style-type: none"> This option would utilise existing roads and infrastructure and would not require acquisition of new land or construction of new facilities. There is therefore no clear relationship between this option and Landscape. 	0
Visual amenity		<ul style="list-style-type: none"> This option would utilise existing roads and infrastructure and would not require acquisition of new land or construction of new facilities. There is therefore no clear relationship between this option and Visual Amenity. 	0
Agriculture and soils	<ul style="list-style-type: none"> There are no land based SSSI or other designations surrounding the proposed station site. 	<ul style="list-style-type: none"> This option would utilise existing roads and infrastructure and would not require acquisition of new land or construction of new facilities. 	0

Table P.8: Option 3 – Environmental Appraisal – Table 3

Environmental Aspect	Baseline Key Characteristics	Commentary	Score
Cultural Heritage	<ul style="list-style-type: none"> The towns of Lockerbie, Beattock and Moffat contain a number of listed buildings (Category A to C) There are a number of scheduled monuments in the study area, including Torwood Roman camp. 	<ul style="list-style-type: none"> This option would utilise existing roads and infrastructure and would not require acquisition of new land or construction of new facilities. There is therefore no clear relationship between this option and Cultural Heritage. 	0
Physical Fitness	<ul style="list-style-type: none"> The population of Dumfries & Galloway at 2011 Census was 151,324. 21.8% of the total population is people aged 65 years and over. Life expectancy in Dumfries & Galloway is much in line with the Scotland average with life expectancy at birth being 78.1 for males and 81.3 for females. 	<ul style="list-style-type: none"> Improvements to bus services and integration with rail would reduce journey times for all demographic groups in the areas, and by improving access to essential facilities and services promote social inclusion for those without a car. As such, positive impacts are predicted. This option provide would support increased bus patronage in the area which would improve accessibility to recreational activities and healthcare facilities, especially for those without a car. A modal shift towards public transport would also reduce air pollution and noise in urban areas that is usually associated with vehicular traffic. This option would therefore have a positive effect on health. 	1

Table P.9: Option 6 – Environmental Appraisal – Table 1

Environmental Aspect	Baseline Key Characteristics	Commentary	Score
Noise and vibration	<ul style="list-style-type: none"> • Beattock village is situated on a minor road off the A701, only providing access to the village itself, with the A701 essentially providing a 'Beattock bypass'. As such traffic volumes and associated noise within the village is low. • The West Coast Main Line routes through the village on which high speed inter-city trains operate, with the associated noise and vibration impacts. 	<ul style="list-style-type: none"> • The option does not consider the provision of additional rail services, but that some existing services incur an additional rail stop at Beattock. Currently trains (freight and passenger) pass the proposed site without stopping. The only impact on the local noise environment will be the noise associated with passenger trains pulling away from the proposed platform. • If the station were to be built on the former station site, it would be adjacent to the residential properties on Woodlea Court and Nosie mitigation measures would be required. • If the station were to be built at a site to the south of the village, it would not be close to any residential properties and noise mitigation measures would be less likely to be required. • Final station design should ensure any noise impacts are minimised through the incorporation of appropriate Noise barriers. • The principal source of vibration will be that associated with train movements. As the WCML is already utilised by trains, no new types of vibration will be introduced by the option. As vibration increases with train speed, the additional halt at Beattock will reduced the train speed, which will lessen the vibration impact. 	-1
Global air quality – carbon dioxide (CO2)	<ul style="list-style-type: none"> • In 2015, the anticipated total CO2 emissions for Dumfries & Galloway was 715 kilotonnes (kt), 554 kt (77%) of which resulted from road transport 	<ul style="list-style-type: none"> • This option would directly help to encourage increased rail patronage in the area. This would support sustainable modal shift and could reduce car dependency, especially for single occupancy journeys. This would help reduce car traffic and associated fossil fuel consumption and greenhouse gas emissions, resulting in a positive impact on Climatic Factors. 	1

Table P.10: Option 6 – Environmental Appraisal – Table 2

Environmental Aspect	Baseline Key Characteristics	Commentary	Score
Local air quality – particulates (PM10) and nitrogen dioxide (NO2)	<ul style="list-style-type: none"> • There are no Air Quality Management Areas (AQMA) designated in Dumfries & Galloway. • Car ownership in Dumfries & Galloway is increasing, exacerbating pressure on the network and contributing to poor public health through poor air quality, noise and inactivity. 	<ul style="list-style-type: none"> • This option would directly help to encourage increased rail patronage in the area. This would support sustainable modal shift and could reduce car dependency, especially for single occupancy journeys. This would help reduce car traffic and associated air pollution, resulting in a positive impact on Air Quality. • There may be some minor decrease in air quality during construction but this would be temporary. 	1
Water quality; drainage and flood defence	<ul style="list-style-type: none"> • The principle watercourses in the area are Garpole Water, Evan Water, Moffat Water and River Annan. 	<ul style="list-style-type: none"> • At time of site visit some localised flooding was witnessed near one of the proposed station sites. A detailed flood assessment would need to be considered at a later design stage. • It is assumed that construction works would follow good site practices to avoid pollution of the water environment. 	0
Geology	<ul style="list-style-type: none"> • There are no land based SSSI or other designations surrounding the proposed station site. 	<ul style="list-style-type: none"> • The station is not predicted to affect any designated geological sites. This would need to be confirmed at later stages of design and assessment when more specific alignment information was available. 	0

Table P.11: Option 6 – Environmental Appraisal – Table 3

Environmental Aspect	Baseline Key Characteristics	Commentary	Score
Biodiversity and habitats	<ul style="list-style-type: none"> • SSSIs in the surrounding area, include Loch Wood, Shiel Dod. • There are areas of Native Woodland surrounding Beattock and the proposed station sites. 	<ul style="list-style-type: none"> • This option would require the construction of a new railway station in the village of Beattock, at one of two proposed sites, which would require land acquisition. If the station is sited to the south of the village, this permanent development on previously undeveloped land could potentially affect a range of species as a result of habitat loss/fragmentation and displacement including protected species such as badger, red squirrel, otter and bats. Further protected species surveys would need to be undertaken to inform a more specific appraisal of potential impacts. • Mitigation measures would need to be employed to ensure that disturbance works and impacts such as habitat loss from permanent development did not adversely affect the conservation objectives of surrounding designation sites, and measures would need to be taken to avoid affecting the water quality of nearby watercourses. Depending on the potential for likely significant effects, Habitats Regulations Appraisal (HRA) would be required. 	-1
Landscape	<ul style="list-style-type: none"> • The study area is characterised largely rural agricultural land with foothills. • There are no Garden and Designed Landscape (GDL) areas or Country Parks located within the study area. 	<ul style="list-style-type: none"> • The station is not predicted to affect any designated geological sites. This would need to be confirmed at later stages of design and assessment when more specific alignment information was available. • The station would provide increased opportunity for visitors to access the local landscape. 	0
Visual amenity		<ul style="list-style-type: none"> • This option requires the acquisition of new land and the construction of new facilities. • The station is not close to any recognised sites such as national parks, national scenic areas, natural heritage zones, country parks or other similar locations. • Given the small development envisaged to provide the station, the station is not anticipated to have any significant impact on the local landscape or visual amenity. 	1

Table P.12: Option 6 – Environmental Appraisal – Table 4

Environmental Aspect	Baseline Key Characteristics	Commentary	Score
Agriculture and soils	<ul style="list-style-type: none"> There are no land based SSSI or other designations surrounding the proposed station site. 	<ul style="list-style-type: none"> Construction works for the station has the potential to permanently affect soils from earthworks, excavations and compression of soils as well as loss of soil resources. The station is not predicted to affect any designated geological sites. This would need to be confirmed at later stages of design and assessment when more specific alignment information was available. There is some minor potential for construction to affect areas of potentially contaminated land which may be associated with former industrial areas, e.g. at the edges of built up areas and this would require more detailed investigation, assessment and, if appropriate, remediation at later design stages It is assumed that appropriate measures would be adopted during physical works to prevent pollution of the environment. 	0
Cultural Heritage	<ul style="list-style-type: none"> The towns of Lockerbie, Beattock and Moffat contain a number of listed buildings (Category A to C) There are a number of scheduled monuments in the study area, including Torwood Roman camp. 	<ul style="list-style-type: none"> There are a number of Listed Buildings within 1km of the proposed station site and construction works could affect the setting of these sites depending on the final design of permanent infrastructure. Construction works for permanent infrastructure works are predicted to have the potential to encounter as yet unrealised archaeology and it is assumed that mitigation measures, such as watching briefs and appropriate trial trenching works would be undertaken in key areas, without significant adverse impacts. 	0
Physical Fitness	<ul style="list-style-type: none"> The population of Dumfries & Galloway at 2011 Census was 151,324. 21.8% of the total population is people aged 65 years and over. Life expectancy in Dumfries & Galloway is much in line with the Scotland average with life expectancy at birth being 78.1 for males and 81.3 for females. 	<ul style="list-style-type: none"> Improvements to rail infrastructure and integration with other modes would improve access to essential facilities and services and promote social inclusion for those without a car. As such, positive impacts are predicted. This option would support increased rail patronage in the area which would improve accessibility to recreational activities, open space and healthcare facilities, especially for those without a car. A modal shift towards public transport would also reduce air pollution and noise in urban areas that are usually associated with vehicular traffic. This option would therefore have a positive impact on health. 	1

Appendix Q Part 2: Safety Appraisal

Table Q.1: Option 1a/b – Safety Appraisal – Table 1

Safety Criteria	Sub-criteria	Relative Importance	Vulnerable Groups of Society affected	Commentary	Score
Accidents	The user groups affected by improvements and the anticipated change in the balance of accidents, for example fewer fatalities or serious injury accidents, but an increase in slight injury accidents	Low	<ul style="list-style-type: none"> Road Users 	<p>It is anticipated there may be minor reductions in those using the roads between Moffat, Beattock and Lockerbie (i.e. A701 and M74) if there is some modal shift to bus. This is however likely to only have a very minor impact on accident rates.</p> <p>It is unlikely that there would be any specific change in the balance of accidents (minor, serious or fatal) as a result of option implementation.</p>	0

Table Q.2: Option 1a/b – Safety Appraisal – Table 2

Safety Criteria	Sub-criteria	Relative Importance	Vulnerable Groups of Society affected	Without Strategy	With Strategy	Commentary	Score
Security	Site perimeters, entrances and exits	Low		Moderate	Moderate	The option will utilise existing bus stops whose perimeters have varying levels of clarity depending on where they are sited. Some bus stops in the area offer a covered shelter for passengers with a marked stopping area in the road where appropriate.	0
	Formal surveillance	Medium		Poor	Poor	Bus stops and services do not offer formal CCTV surveillance facilities.	0
	Informal surveillance	High		Moderate	Moderate	Whilst often in remote locations away from retailers or activity, bus stops in Dumfries & Galloway are made of transparent materials that allow for open visibility from site surrounds.	0
	Landscaping	Low		N/A	N/A	There is no clear relationship between the effect on landscaping and the perceived security of this option.	0
	Lighting and visibility	High		Poor	Poor	There is no dedicated lighting for bus stop facilities in the study area.	0
	Emergency call	Medium		Poor	Poor	There is no provision of emergency phones, help points or public telephones associated with this option.	0

Table Q.3: Option 3 – Safety Appraisal – Table 1

Safety Criteria	Sub-criteria	Relative Importance	Vulnerable Groups of Society affected	Commentary	Score
Accidents	The user groups affected by improvements and the anticipated change in the balance of accidents, for example fewer fatalities or serious injury accidents, but an increase in slight injury accidents	Low	<ul style="list-style-type: none"> Road Users 	<p>It is anticipated there may be minor reductions in those using the roads between Moffat, Beattock and Lockerbie (i.e. A701 and M74) if there is some modal shift to bus. This is however likely to only have a very minor impact on accident rates.</p> <p>It is unlikely that there would be any specific change in the balance of accidents (minor, serious or fatal) as a result of option implementation.</p>	0

Table Q.4: Option 3 – Safety Appraisal – Table 2

Safety Criteria	Sub-criteria	Relative Importance	Vulnerable Groups of Society affected	Without Strategy	With Strategy	Commentary	Score
Security	Site perimeters, entrances and exits	Low		Moderate	Moderate	The option will utilise existing bus stops whose perimeters have varying levels of clarity depending on where they are sited. Some bus stops in the area offer a covered shelter for passengers with a marked stopping area in the road where appropriate.	0
	Formal surveillance	Medium		Poor	Poor	Bus stops and services do not offer formal CCTV surveillance facilities.	0
	Informal surveillance	High		Moderate	Moderate	Whilst often in remote locations away from retailers or activity, bus stops in Dumfries & Galloway are made of transparent materials that allow for open visibility from site surrounds.	0
	Landscaping	Low		N/A	N/A	There is no clear relationship between the effect on landscaping and the perceived security of this option.	0
	Lighting and visibility	High		Poor	Poor	There is no dedicated lighting for bus stop facilities in the study area.	0
	Emergency call	Medium		Poor	Poor	There is no provision of emergency phones, help points or public telephones associated with this option.	0

Table Q.5: Option 6 – Safety Appraisal – Table 1

Safety Criteria	Sub-criteria	Relative Importance	Vulnerable Groups of Society affected	Without Strategy	With Strategy	Commentary	Score
Security	Site perimeters, entrances and exits	Medium	<ul style="list-style-type: none"> • Lone travellers • The Elderly • Children 	Moderate	High	The proposed station site would be clearly marked with site perimeters/exists.	2
	Formal surveillance	Medium		Poor	Medium	<p>Whilst the proposed station is unlikely to be staffed, it is assumed that a CCTV system will be installed to ensure formal surveillance. No such surveillance system currently exists for bus stops in the area. If the station were to be located to the south of the village, access to the station by foot or cycle may be up to 1km from the furthest properties in Beattock with the final 300m approach to the station along a road not overlooked by residential properties and passing under a rail bridge. Given the distance and nature of the route, there is a security risk for those accessing the station by foot or cycle. Improved lighting and surveillance could be provided along the route to improve security and increase the perceived feelings of safety.</p> <p>If the station were to be located at the former station site (immediately adjacent to the village), the route to the station would be along roads overlooked by residential properties and is unlikely to feel unsafe.</p>	-1
	Informal surveillance	High		N/A	Low	The final design of the station site is still to be determined, however will be arranged in a manner that allows informal surveillance across platforms and from the surrounding street. As noted above, if the station were to be located to the south of the village, the distance of the station from the village centre poses a security risk for rail users accessing the station by foot or cycle. There are no overlooking properties along the last 300m from the edge of the village to the station.	-1

Table Q.6: Option 6 – Safety Appraisal – Table 2

Safety Criteria	Sub-criteria	Relative Importance	Vulnerable Groups of Society affected	Without Strategy	With Strategy	Commentary	Score
Security	Site perimeters, entrances and exits	Medium	<ul style="list-style-type: none"> • Lone travellers • The Elderly • Children 	Moderate	High	The proposed station site would be clearly marked with site perimeters/exists.	2
	Formal surveillance	Medium		Poor	Medium	<p>Whilst the proposed station is unlikely to be staffed, it is assumed that a CCTV system will be installed to ensure formal surveillance. No such surveillance system currently exists for bus stops in the area. If the station were to be located to the south of the village, access to the station by foot or cycle may be up to 1km from the furthest properties in Beattock with the final 300m approach to the station along a road not overlooked by residential properties and passing under a rail bridge. Given the distance and nature of the route, there is a security risk for those accessing the station by foot or cycle. Improved lighting and surveillance could be provided along the route to improve security and increase the perceived feelings of safety.</p> <p>If the station were to be located at the former station site (immediately adjacent to the village), the route to the station would be along roads overlooked by residential properties and is unlikely to feel unsafe.</p>	-1
	Informal surveillance	High		N/A	Low	The final design of the station site is still to be determined, however will be arranged in a manner that allows informal surveillance across platforms and from the surrounding street. As noted above, if the station were to be located to the south of the village, the distance of the station from the village centre poses a security risk for rail users accessing the station by foot or cycle. There are no overlooking properties along the last 300m from the edge of the village to the station.	-1

Table Q.7: Option 6 – Safety Appraisal – Table 3

Safety Criteria	Sub-criteria	Relative Importance	Vulnerable Groups of Society affected	Without Strategy	With Strategy	Commentary	Score
Security	Landscaping	Low	<ul style="list-style-type: none"> • Lone travellers • The Elderly • Children 	N/A	High	The final design of the station site is still to be determined however it is assumed will utilise a positive use of landscaping features to contribute to visibility and deter antisocial behaviour.	1
	Lighting and visibility	High		Moderate	High	The final design of the station site is still to be determined, but it is assumed will feature sufficient lighting in passenger areas. The lighting in the station environment is likely to be of a better quality than existing lighting at bus stops in the area, leading to real and perceived security improvements for public transport users. However, as noted above, the distance of the south station location from the village centre poses a security risk for rail users accessing the station by foot or cycle. Lighting improvements along this stretch of the road would be required.	1
	Emergency call	Medium		Poor	High	The proposed station would have an emergency phone on site alongside appropriate information on emergency help procedures. No such emergency help exists at current bus stops in the area.	2

Appendix R Part 2: Economy Appraisal

R.1 Option 6

Demand and Revenue Forecasting

- R.1.1 A demand forecasting exercise has been undertaken to estimate the passenger demand and revenue generated by a new railway station at Beattock. This exercise also considered the knock-on effects of a new station upon demand and revenue at the adjacent Lockerbie station, in addition to the journey time costs borne by through traffic on the line. This allowed calculation of a net base year impact in terms of journeys and revenue – i.e. how many additional rail journeys would be generated overall and how much additional revenue would this raise if the station were to open today.
- R.1.2 The approach taken to the calculation of these impacts is discussed in the sections below, and split into the following elements:
- Outbound demand at Beattock Station;
 - Inbound demand at Beattock Station;
 - Transfer of existing rail passengers to Beattock Station;
 - Journey time impacts on through passengers.

Outbound Demand and Revenue at Beattock

- R.1.3 Demand for travel from a new Beattock Station was estimated primarily on the basis of demand profiles seen at the existing station at Lockerbie.
- R.1.4 Firstly, the catchment areas for the existing station at Lockerbie and the future catchment for the proposed Beattock station were specified. It was assumed that the outermost extents of the respective catchments corresponded with the area over which each station is the closest station available on the West Coast Main Line. See Figure R.1 for illustrations of the existing station catchment areas and the future station catchment areas if Beattock is constructed.
- R.1.5 Sub-catchments of 0-800m, 801-5000m and 5001m+ buffers of the station were then defined to identify which output areas had centroids within each of the catchment bands to provide an estimate of the population living within each catchment band (2001 census Table KS101SC).

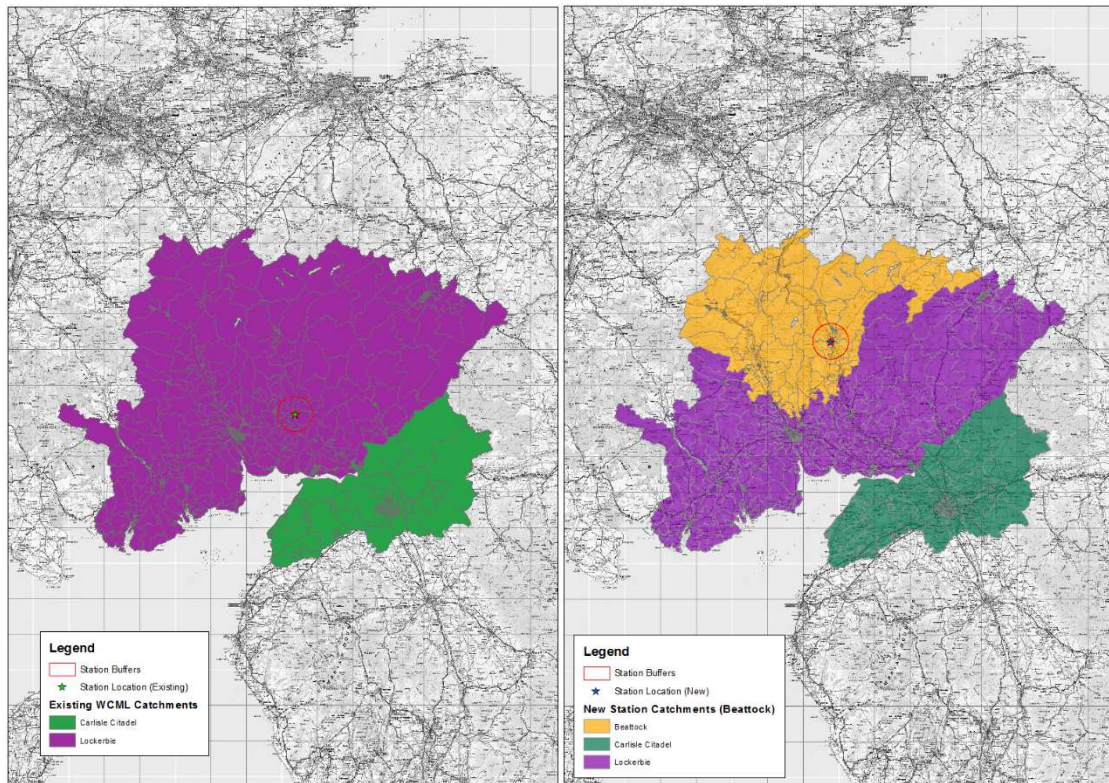


Figure R.1: Existing Station Catchments (left) and Future Station Catchments with Beattock (right)

R.1.6 The proportion of outbound Lockerbie railway station trips which were recorded as being made from each of the catchments from the January 2018 Platform Interview surveys were then similarly identified. These proportions were applied to the total annual outbound journeys from Lockerbie station to calculate the annual outbound rail journeys being made by residents of each catchment band. Existing annual outbound journeys from Lockerbie station were obtained from interrogation of MOIRA, assuming no change in timetable since May 2017.

R.1.7 Table R.1 summarises the values used in this calculation.

Table R.1: Outbound Demand and Revenue Calculation

	0-800m	801-5000m	>5000m
Lockerbie population	3,221	2,114	134,879
Lockerbie respondents estimated annual journeys	912	383	5,280
Lockerbie catchment split	14%	6%	80%
Annual outbound journeys from Lockerbie	24,620	10,341	142,577
Estimated trip rate based on Lockerbie survey data	7.64	4.89	1.06
Beattock population	601	3,048	15,162
Proportion of Lockerbie services which will transfer to Beattock	35.3%		

	0-800m	801-5000m	>5000m
Beattock annual outbound demand	1,621	5,263	5,657
Beattock average outbound yield (2018 Prices)	£11.29		
Beattock annual outbound revenue (2018 Prices)	£141,578		

R.1.8 The corresponding revenue was then calculated by multiplying estimated outbound demand from Beattock Station by an estimated average yield for Beattock Station. The average yield from Beattock was calculated based on existing yields and demand between Lockerbie/Carlisle and destinations to the north/south:

- Matrix outputs were obtained from MOIRA indicating journeys and revenue from Lockerbie and Carlisle to all possible destinations.
- Destination stations were then identified as lying to the north or south of Lockerbie/Carlisle. Average yields were then calculated for travel between Lockerbie/Carlisle and destinations to the north and to the south.
- A relationship was derived in terms of the distance between the stations and yield (i.e. difference in yield per km). Based on this relationship and the distance between Lockerbie and Beattock stations, yields were estimated for travel from Beattock to the north/south.
- As the proportion of people travelling to destinations in the north/south will vary as you travel along the line, a relationship was similarly derived in terms of the distance between the existing stations and the balance of travel to destinations in the north/south.
- We then applied this relationship to estimate the relative proportions of travel in each direction from Beattock station, and these weightings were applied to the north and south yield estimates for Beattock to calculate the overall average yield.

Inbound demand and revenue at Beattock

R.1.9 To calculate the demand and revenue associated with inbound trips to Beattock, a ratio was obtained of inbound to outbound trips at Lockerbie station and the factor applied to the forecast outbound trips to estimate inbound demand.

R.1.10 The same approach as was used to calculate outbound revenue was taken to calculate inbound revenue, except using inbound values from MOIRA for Lockerbie and Carlisle stations.

Table R.2: Inbound Demand and Revenue Calculation

Element	Value
Ratio of Outbound to Inbound journeys at Lockerbie	71:29
Annual Inbound Journeys at Beattock	5,206
Beattock average inbound yield (2018 Prices)	£18.01
Beattock annual inbound revenue (2018 Prices)	£93,763

Transfer of Passengers from Existing Stations

R.1.11 The new Beattock station will also attract passengers who currently travel by rail but use other stations, specifically including Lockerbie, which sits to the immediate south of Beattock.

R.1.12 The number of existing rail users likely to be abstracted from Lockerbie was calculated as follows:

- Identification of the proportion of the population who are currently located closer to Lockerbie, but will in future be closer to Beattock, as illustrated in Figure R.1. This value was then applied directly to annual Lockerbie outbound demand to calculate the number of existing outbound rail journeys which will be lost from Lockerbie.
- As inbound passengers at Lockerbie were not surveyed, there is no information on the distribution of their destinations. Therefore it has been assumed that the rate of inbound transfer would be approximately half of the outbound transfer.
- The number of journeys transferred was multiplied by the average yield for outbound journeys (again obtained from MOIRA, assuming no change in timetable) at each station to calculate the revenue lost.

R.1.13 Table R.3 presents the values used in the above calculation.

Table R.3: Passenger Transfer Calculation

Element	Southbound	Inbound
Assumed proportion of journeys transferred from Lockerbie to Beattock	7.5%	3.8%
Existing demand at Lockerbie	177,539	73,703
Proportion of Lockerbie services which will transfer to Beattock	35.3%	
Potentially transferable demand at Lockerbie	62,661	26,013
Change in demand at Lockerbie	-4,697	-975
Average existing Lockerbie yield (2018 Prices)	£11.83	£15.91
Change in revenue (2018 Prices)	-£55,559	-£15,512

R.1.14 Overall, it was estimated that 5,672 passenger journeys will transfer from Lockerbie station because of the construction of a new station at Beattock. This will result in a total lost revenue of £71,070.

Journey Time Impacts on Demand and Revenue

R.1.15 Proposals for a new station at Beattock assume that approximately one in three stops at Lockerbie would move to Beattock. As a result, there would be no impact upon journey times for through traffic; however, loss of a stop at Lockerbie will incur a loss of passenger journeys as the Lockerbie catchment is larger than that for Beattock.

R.1.16 MOIRA Timetable Manager provides a means of comparing an existing timetable with an alternative timetable. A 'Do Something' timetable was developed which takes account of loss of calls at Lockerbie. MOIRA was then utilised to calculate the change in journeys and revenue that would result. MOIRA software permits the calculation of journey and revenue impacts,

accounting for the loss of calls at Lockerbie, but it cannot account for the transfer of passengers to Beattock, on account of the new station being closer, and nor can it account for the potential for those living within the Lockerbie catchment to catch the train from this new station. As such, MOIRA outputs should be seen as a worst case.

R.1.17 It is estimated that the addition of a stop at Beattock Station and associated loss of calls at Lockerbie would result in a reduction in passengers using the West Coast Main Line of 36,471 journeys and a loss of £368,400 in revenue (in 2018 Prices).

Base Year Results

R.1.18 Combining the various demand and revenue impacts explored above, it is estimated that if Beattock Station was to open in 2018, it would have an overall net impact of decreasing rail passenger journeys by approximately 24,400 per annum and a loss of £204,129 in fare revenue. A full breakdown by market segment is provided in Table R.4.

Table R.4: Base Year Results

Market Segment	Journeys	Revenue
Outbound Demand	12,541	£141,578
Inbound Demand	5,206	£93,763
Beattock Station Usage	17,747	£235,341
Transfer from Lockerbie	-5,672	-£71,070
Impact of Lost Calls	-36,471	-£368,400
Overall Net Impact	-24,396	-£204,129

Benefit Cost Ratio

Benefits Calculations

R.1.19 In order to calculate a Benefit Cost Ratio (BCR) for the potential station re-opening, the calculated anticipated demand and revenue impacts have been estimated over the 60-year appraisal period along with the costs the overall financial impacts have been discounted to 2010.

R.1.20 The associated journey time benefits have been calculated and to 2010, to then generate an overall BCR for the option.

R.1.21 To calculate the benefits, the following steps were undertaken:

- The demand figures calculated above comprised of:
 - **'Station Switchers'** - Those switching from another station (Lockerbie). Travel time savings (and hence the benefits associated with these) for these users were estimated based on an assumption on journey purpose. The journey purpose split assumptions were estimated based on the platform surveys undertaken at Lockerbie station (discussed in Appendix N) with journey purpose identified as either Commuting; Business or Other travel purposes.
 - **New rail trips**, either:
 - Entirely new trips;

- Those switching from car; or
- Those switching from public transport.

The proportions were estimated on the basis of the platform surveys where people were asked how they would have made that journey in the absence of a train service

- For trips switching from other modes,
 - LENNON data was utilised to consider the distribution of these trips based on trip origins and destinations at Lockerbie station; and
 - Time savings from these trips was estimated to determine the benefits based on the assumptions on journey purpose.
- Overall demand was projected forward for 30 years using a 2.5% per annum growth rate (based on recent local trends in rail passenger growth), with no further growth for the following 30 years;
- The volume of through passengers was estimated from the LENNON data, with each affected passenger assigned a 2-minute travel time disbenefit (again based on an assumed purpose split)
- The figures were combined to provide an estimate of the overall net benefits assuming an opening year of 2023;
- The benefits were then discounted to a base year of 2010 to provide the Present Value of Benefits (PVB).

Revenue Calculations

R.1.22 Revenue for the station was calculated as discussed above. It was assumed that, as per the railway industry Passenger Demand Forecasting Handbook, there would be a station demand 'ramp up' from the opening year (53% in Year 1, 78% in Year 2, 90% in year 3, 100% thereafter).

- The revenue figures assumed from assuming an opening year of 2023 for 60 years and were discounted to a base year of 2010 to provide the Present Value of Revenue (PVR).

R.1.23 The anticipated revenue was added to the Present Value of Benefits to provide an adjusted BRC figure.

Station Cost Calculations

R.1.24 The station costs were estimated as set out in Appendix H . Optimism Bias of 44% was added to the figures (although it should be noted that the station costs were based on station **outturn** costs as and such already make allowance for optimising bias).

R.1.25 Station build costs were split:

- 50% in 2021; and
- 50% in 2022.

R.1.26 The costs were discounted to a base year of 2010 to provide the Present Value of Costs (PVC).

Calculating a BCR

R.1.27 Table R.5 sets out the estimated Benefit Cost Ratio assuming a station cost of:

- £15m – the higher end of the estimated range;
- £14m – the lower end of the estimated range;
- £10m and £5m - to account for a level of optimism bias already inherent in the cost figures as they are based on other station build **outturn** costs.

Table R.5: Option 6 Benefit-Cost Ratio

Station Costs (£m)		PVC (£m)	PVB (£m)		BCR (£m)	
Base	With optimism bias	With optimism bias	Without revenue	With revenue	Without revenue	With revenue
£15.00	£21.60	£14.54	£3.86	-£6.59	0.27	-0.45
£14.00	£20.16	£13.58	£3.86	-£6.59	0.28	-0.49
£10.00	£14.40	£9.70	£3.86	-£6.59	0.4	-0.68
£5.00	£7.20	£4.85	£3.86	-£6.59	0.8	-1.36

R.1.28 It is noted that a shuttle bus would be required to provide suitable connectivity between Moffat and Beattock. A cost for this has been estimated at around **£123k** annually (in order to provide a service to meet all the arriving and departing trains).

Appendix S Part 2: Integration Appraisal

S.1.1 The STAG integration criteria focuses on three key integration elements:

- Transport integration;
- Transport and Land-use Integration; and
- Policy Integration

S.1.2 Appraisal was undertaken at the Part 1 stage of the study, focussing on the transport integration elements of the integration criteria, and specifically focussing on the bus options.

S.1.3 At this stage of the appraisal, a full appraisal against all three elements of the integration criteria has been undertaken, drawing on the work at the Part 1 stage.

Option 1a/b

Transport Integration

S.1.4 In terms of transport integration, Option 1a/b was appraised in great detail during the Part 1 appraisal when the reduction in walk and wait time between bus and rail services due to the option was analysed in detail. The analysis is presented in Appendix J presenting the detailed analysis. In summary, the analysis highlighted that:

- Option 1a had the potential to substantially reduce average journey times for inbound and outbound trips to Edinburgh, Glasgow and Carlisle. With
 - Reductions in public transport travel time for trips between Beattock and Carlisle in the AM and PM periods (35 minutes), and evening period (45 minutes).
 - In the AM period, the journey to Carlisle by public transport is just 10 minutes longer than the equivalent trip by private car, only 6 minutes longer in the PM period and 13 minutes longer in the evening period.
 - For trips to Edinburgh, the option provides reductions in public transport travel time in the AM period (40 minutes) and the PM period (55 minutes), and evening period (2 hours 20).
 - In the AM, PM and evening periods, the journey to Edinburgh by public transport is around just 10 minutes longer than the equivalent trip by private car.
- Option 1b was less optimal.

S.1.5 It should be noted that the option being taken forward to Part 2 appraisal (Option 1a/b) is a combination of Option 1a and 1b with:

- Adjusted times on existing instances of the 380 service to better link with rail departure / arrival times; and
- Additional 'direct' instances of the 380 service which would 'in-fill' between existing services. These additional direct services would route between Moffat / Beattock and Lockerbie via the M74.

S.1.6 The option would provide good integration between the bus and key inbound and outbound train services at Lockerbie.

S.1.7 The option would not provide any improvements in terms of ticketing and would utilise existing buses and bus stop infrastructure.

Transport and Land-Use Integration

S.1.8 The *Dumfries and Galloway 2014 Local Development Plan* does not set out any housing allocations for Beattock. However, the Plan sets out an allocation of 265 housing units in Moffat as well as some mixed use allocation. The proposed new bus service offering direct access to Lockerbie railway station and improving the connectivity of Lockerbie from Moffat, may make these dwellings more attractive to potential home-buyers, helping facilitate this housing development, in particular, it may improve the attractiveness of Moffat as a commuter town for working in Edinburgh.

Policy Integration

S.1.9 Improving the public transport network and transport integration supports the aims of the National Transport Strategy, SWestrans Regional Transport Strategy, the Bus Action Plan and the Local Transport Strategy. The option is therefore aligned with the broader policy goals included within key national, regional and local policy documents.

S.1.10 STAG’s Policy Assessment Framework (PAF) has been used to appraise how well the option fits with national policy objectives. The outcomes of this assessment is shown in Figure S.1 and Figure S.2. Note that for comparative purposes, these diagrams also contain the scores for Option 3 and Option 6. The assessment shows Option 1a/b scoring either neutrally or positively against all national objectives and sub-objectives.

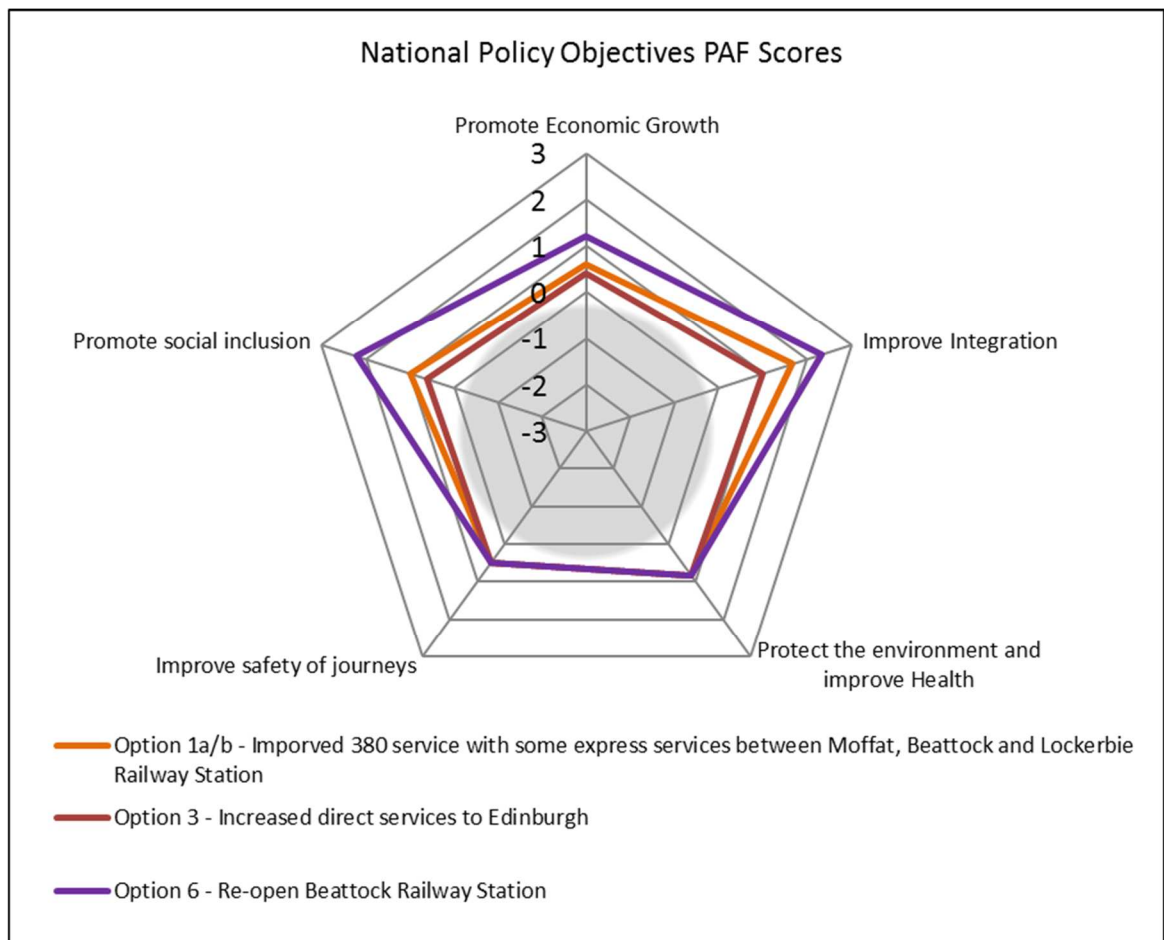


Figure S.1: Policy Assessment Framework – National Policy Objectives – PAF Scores (Option 1a/b, 3 and 6)

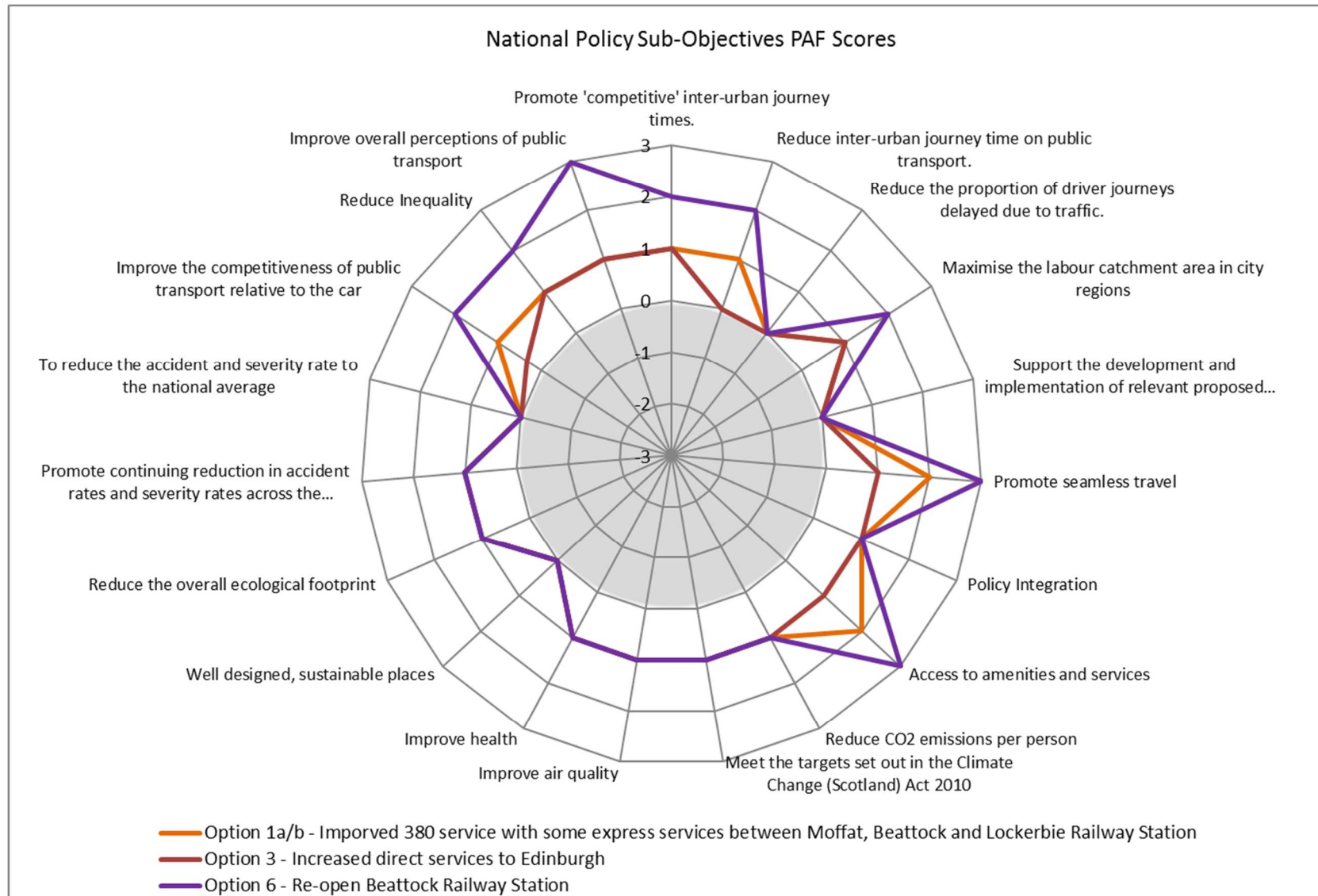


Figure S.2: Policy Assessment Framework – National Policy Sub-Objectives – PAF Scores (Option 1a and 6)

Option 3

Transport Integration

- S.1.11 In terms of transport integration, Option 3 would offer increased accessibility to Edinburgh, enabling increased connectivity both from and to the study area across the day.
- S.1.12 The option would not provide any improvements in terms of ticketing and would utilise existing buses and bus stop infrastructure.

Transport and Land-Use Integration

- S.1.13 As noted above, the *Dumfries and Galloway 2014 Local Development Plan* does not set out any housing allocations for Beattock. However, the Plan sets out an allocation of 265 housing units in Moffat as well as some mixed use allocation. This option provides increased connectivity to Edinburgh not only linking Beattock, Moffat and Edinburgh, but en-route communities including Biggar. The increased access may encourage the development of the identified site in Moffat.

Policy Integration

- S.1.14 Improving the public transport network and transport integration supports the aims of the National Transport Strategy, SWestrans Regional Transport Strategy, the Bus Action Plan and the Local Transport Strategy. The option is therefore aligned with the broader policy goals included within key national, regional and local policy documents.
- S.1.15 STAG's Policy Assessment Framework (PAF) has been used to appraisal how well the option fits with national policy objectives. Figure S.1 and Figure S.2 presented the option appraisal against STAG's Policy Assessment Framework (PAF). The assessment shows Option 3 scoring either neutrally or positively against all national objectives and sub-objectives.

Option 6

Transport Integration

- S.1.16 In terms of transport integration, Option 6 was not appraised in the same detail as Option 1a/b during the Part 1 appraisal. The option however, does assume a dedicated shuttle bus offering access to and from the railway station to meet train departures and arrivals. The service would be providing good integration between bus and rail modes minimising interchange time.

Transport and Land-Use Integration

- S.1.17 As noted above, the *Dumfries and Galloway 2014 Local Development Plan* does not set out any housing allocations for Beattock. However, the Plan sets out an allocation of 265 housing units in Moffat as well as some mixed use allocation. By improving public transport, the option supports an objective within the LDP to identify mixed use sites with potential to provide opportunities for new start-up businesses or enterprise units to support sustainable economic growth and the regeneration.
- S.1.18 There are many opportunities coming forward in and around Carlisle (particularly with respect to the emerging Borderlands Growth Deal) which could be accessed more easily by both Moffat and Beattock residents if Beattock village were directly served by rail. The trip by bus then train is currently between 60minutes and 2 hrs dependent on time of travel / interchange wait at Lockerbie but would be consistently around 40 minutes by rail if Beattock Railway Station were reopened, enabling the opportunities to be readily accessed.

Policy Integration

- S.1.19 Improving the public transport network and transport integration supports the aims of the National Transport Strategy, SWestrans Regional Transport Strategy, the Bus Action Plan and the Local Transport Strategy. The option is therefore aligned with the broader policy goals included within key national, regional and local policy documents.
- S.1.20 STAG's Policy Assessment Framework (PAF) has been used to appraise how well the option fits with national policy objectives. Figure S.1 and Figure S.2 presented the option appraisal against STAG's Policy Assessment Framework (PAF). The assessment shows Option 6 scoring well against all national objectives and sub-objectives.

Appendix T Part 2: Accessibility and Social Inclusion Appraisal

T.1 Option 1a/b

Community Accessibility

Public transport Network Coverage

- T.1.1 The option provides increased public transport coverage for the area with an improved direct link to Lockerbie. This enables improved connectivity and reduced access time to the West Coast Main Line rail network for travel to / from further afield. The new service enables access two additional services per day from Lockerbie Railway Station.

Local Accessibility

- T.1.2 The option is strategic in nature and does not provide any additional opportunities to walk to cycle to services and facilities. No severance arises from the proposed option.

Comparative Accessibility

People groups

- T.1.3 The option is particularly beneficially to those without a private car or unable to drive. This includes:
- Those on lower incomes for whom owning a car is not possible due to the costs involved;
 - Those less-abled for whom driving is not an option;
 - The elderly who have stopped driving;
 - Those seeking Higher Education opportunities;
 - Children under the age of 17.
- T.1.4 In terms of those on lower incomes and the less-abled, the increased accessibility may open up new job opportunities further afield (such as in Carlisle) as well as enabling better access to social and recreational activities in Edinburgh and Glasgow. For the elderly, the improved access may enable improved accessibility to the major hospitals in Edinburgh and Glasgow.
- T.1.5 In terms of education, the improved accessibility to Edinburgh and Glasgow may benefit those for whom living away from home is not affordable. The increase in access to two of Scotland's major cities may enable travel from home on a part-weekly basis (many university courses now run as 3-full days rather than spread across the week). Students may be able to stay at home to continue their education.
- T.1.6 Particularly for school children, the option would provide an increased ability to travel independently, providing access to a greater range of extra-curriculum and social activities in which to participate, especially in Lockerbie and Carlisle.

Geographical Location

- T.1.7 Beattock and Moffat are located in a very rural location. The improved access to the WCML would connect the community to a greater number of rail services offering travel to further afield. This may help combat feelings of community isolation.

T.2 Option 3

Community Accessibility

Public transport Network Coverage

- T.2.1 The option does not provide increased geographical coverage for the area but does provide increased connectivity in terms of number of connections to Edinburgh.

Local Accessibility

- T.2.2 The option is strategic in nature and does not provide any additional opportunities to walk to cycle to services and facilities. No severance arises from the proposed option.

Comparative Accessibility

People groups

- T.2.3 As with Option 1a/b, the option is particularly beneficially to those without a private car or unable to drive. This includes:
- Those on lower incomes for whom owning a car is not possible due to the costs involved;
 - Those less-abled for whom driving is not an option;
 - Children under the age of 17.
- T.2.4 In terms of those on lower incomes and the less-abled, the increased accessibility to Edinburgh would enable better access to social and recreational activities in the capital.
- T.2.5 Particularly for school children, the option would provide an increased ability to travel independently, providing access to greater range of extra-curriculum and social activities in which to participate in Edinburgh.
- T.2.6 The option may also help support local businesses, especially those connected to the tourism industry, by enabling people to visit the area more easily, attending local events.

Geographical Location

- T.2.7 As noted for Option 1a/b, Beattock and Moffat are located in a very rural location. The improved access to Edinburgh would enable the community to participate in a greater range of activities. This may help combat feelings of community isolation.

T.3 Option 6

Community Accessibility

Public transport Network Coverage

- T.3.1 The option provides increased public transport coverage for the area with new direct access to the rail network. This enables improved connectivity and reduced access time to locations on the GSWL including Glasgow, Edinburgh, Lockerbie and Carlisle.

Local Accessibility

- T.3.2 The option is strategic in nature and does not provide any additional opportunities to walk or cycle to services and facilities. It should be noted that the re-opening of the station in Beattock may impact on operating bus services between Beattock and Lockerbie, potentially reducing them. This would impact on smaller communities between Beattock and Lockerbie (Wamphray, Johnstonebridge etc.), for whom the railway station at Beattock would not be immediately accessible, and whom would experience a reduction in bus service offering, reducing the connectivity from these communities.

Comparative Accessibility

People groups

- T.3.3 As with Option 1a/b, the option is particularly beneficially to those without a private car or unable to drive. This includes:
- Those on lower incomes for whom owning a car is not possible due to the costs involved;
 - Those less-abled for whom driving is not an option;
 - The elderly who have stopped driving;
 - Those seeking Higher Education opportunities;
 - Children under the age of 17.
- T.3.4 In terms of those on lower incomes and the less-abled, the increased rail accessibility may open up new job opportunities. This may be particularly true for opportunities in Carlisle, for which the travel time with the option reduces to just 35 minutes, which could be considered a very satisfactory commute time. The timetable developed would also provide good commuting times. It should be noted that the train journey time would in fact be quicker than the private car to both Edinburgh, Glasgow and Carlisle.
- T.3.5 Particularly for school children, the option would provide an increased ability to travel independently, providing access to a greater range of extra-curriculum and social activities in which to participate in both Edinburgh and Glasgow. The comments made by pupils of Moffat Academy particularly reflected the opportunities that existed for them in both cities. Access to social activities (including concerts) would be possible without the need for a late night parental pick-ups from Lockerbie station. In addition, the station may enable some of the Academy's pupils to access school by rail as well as providing connectivity to schools in Lockerbie to increase the range of subjects available to students.
- T.3.6 For the elderly, the improved access may enable improved accessibility to the major hospitals in Edinburgh and Glasgow.
- T.3.7 Given the significant tourist offering of the town, the option would especially support local businesses, by enabling people to more easily visit the area. The existence of a railway station

does tend to place a location 'on the map' and visitors may be more likely to consider day trips from Glasgow and Edinburgh to visit the local area. This has the potential to significantly benefit the local economy and community through increased spend in the town and likely increased local job opportunities.

- T.3.8 It should be noted that the station in Beattock is around 4.5km from Moffat, which presents an accessibility issue. As such, a shuttle bus would be required and the cost for this has been calculated (and is presented in the Economy appraisal). The shuttle bus would also create an interchange requirement in accessing the train which may not be easy or desirable for some.

Geographical Location

- T.3.9 As noted for Option 1a/b, Beattock and Moffat are located in a very rural location. The improved access to Edinburgh, Glasgow and Carlisle would enable the community to participate in a greater range of activities across a much wider area. In particular, given the fragility of the bus network and uncertainty surrounding future provision, the more permanent fixed nature of direct access to the rail network from the village may help combat feelings of community isolation and may support the long term sustainability of the village.